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UNIVERSITY OF ALBERTA

THE ECONOMIC VALUATION OF THE AESTHETICS OF A PUBLIC BEACH SETTING

BY

© DOROTHY MacAULEY

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of MASTER OF ARTS IN RECREATION.

IN

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled **THE ECONOMIC VALUATION OF THE AESTHETICS OF A PUBLIC BEACH SETTING** submitted by **DOROTHY MacAULEY** in partial fulfillment of the requirements for the degree of **MASTER OF ARTS**.

Dr. G. S. Swinnerton

Dr. L. M. Wankel

Dr. W.E. Phillips

To my late husband,
Keith Robert MacAuley

ABSTRACT

The contingent valuation method was used to estimate the economic value of the aesthetics of a public beach setting in the Rural Municipality of Lakeland in Central Saskatchewan. This recreational setting, which was referred to as the public beach environment, consisted of the three public beaches of Sunnyside Beach, Sunset Bay, and Neis' Beach. A noneconomic measure was also used as an attempt to better understand consumers' dollar valuations of this intangible commodity. Semantic differential scales were used in an adequacy-importance model to determine beach users' attitudes toward both the aesthetics and its attributes. A pilot test, which was based on the focus group approach, was conducted to determine those features of the aesthetics that would be included in this model. The attitude measurements that were estimated were used as a direct value of a taste and preference variable in a demand function. Other determinants of demand included income, substitute beach areas, age, distance from place of permanent residence to the public beach environment, employment, costs associated with beach use, and the number of day visits made to the study area. The dependent variable was beach users' levels of willingness-to-pay to avoid a loss in the quality of the aesthetics. Multiple regression and chi-square analyses were used to analyze the data collected.

During a six week period in the summer of 1989, questionnaires were distributed to residents and nonresidents in the public beach environment. Residents completed and returned 117 of these questionnaires, while eleven were returned by nonresidents. Due to the small sample size of nonresidents, the conclusions and implications of this study are based on the data analysis for residents only. Although the study results included economic and psychological values of the aesthetics, not any one of the regression equations that was determined for this group of beach users was found to be significant. Accordingly, the psychological measure of attitude could not be used to assist in explaining resident beach users' demand for the aesthetics. The results of the chi-square analysis indicated that the problem of strategic bias may have affected the study's results.

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The following individuals should also be acknowledged for their assistance: Gordon Williams, the Reeve of the Lakeland Municipality, for his cooperation and support in the carrying out of this study; Wiktor Adamowicz for his assistance in the development of the survey questionnaires; Ina Toporowski, the manager of the Christopher Lake post office, for arranging the "first" postage paid letters to originate from this outlet; Walter Koch for helping with the delivery of resident questionnaires in the Sunset Bay and Neis' South subdivisions; Gus MacAuley for providing reference material from the Saskatchewan Department of Parks, Recreation, and Culture; Jim Copeland, and Judy Warren in the Department of Rural Economy for making the entry of data on computer files an understandable task; Trent Good at the Saskatchewan Department of Rural Development for taking the time to discuss the various planning and management issues of the Lakeland area; and, finally, the pilot test and survey participants for taking the time to take part in this study.

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Chapter I: Introduction

Natural resources and public lands are used by various industries as inputs in the production of goods and services. Forests, furbearing animals, fish, and minerals are a few examples of these factors of production. Due to the scarcity of such public resources, decisions must be made regarding to which production processes these resources will be allocated (Howe, 1971). Criteria, including benefit-cost ratios, that determine the economic efficiency of different public sector projects can be used to assist in making these decisions. To carry out these analyses, the primary dollar benefits and costs for each project must be determined. Production costs, including labour and equipment, can be easily found in the marketplace. Commodities such as lumber, fish, fur, and minerals can also be priced as private goods in various markets to estimate the primary benefits. On the other hand though, nonmarket commodities such as scenery, aesthetics, and water quality cannot be directly valued in any market. As a result, the production of these goods has often been excluded from decision-making processes.

In efforts to include in allocation decisions those economic activities that produce nonmarket goods, researchers such as Brookshire, Ives, and Schulze (1976), Greenley, Walsh, and Young (1982), Randall, Ives, and Eastman (1974), Rowe, D'Arge, and Brookshire (1980), and Walsh, Gillman, and Loomis (1982) have attempted to determine the economic values of these commodities by using the contingent valuation method. This direct survey technique is one of a number of approaches

that can be used to impute economic values for nonmarket goods (Phillips and Adamowicz, 1986). The contingent valuation method involves the development of a hypothetical market that describes a nonmarket good and any decreases or increases in its quality. Then, survey participants are asked directly how they would value these changes in quality. When these dollar amounts, which represent values of consumer surplus or economic utility that could result from the consumption of nonmarket goods, are determined, they can be used as the primary benefits in benefit-cost analyses. By doing so, social projects that produce nonmarket goods (e.g., the abatement of pollution to enhance water quality) can be evaluated in the same terms as are projects (e.g., forestry and trapping) that use natural resources to produce market goods.

Individuals who make decisions about the uses of natural resources and public lands often do not use the results of contingent valuation studies to guide them in their choices (Peterson, Driver, and Gregory, 1988). These policymakers believe that certain technical issues have not been addressed, and as a result, the credibility of the findings of these studies are questionable. One of these issues deals with the fact that the dollar values derived through the use of the contingent valuation method may underestimate the true value of nonmarket goods. It is felt that other human values should also be determined to reflect more realistic valuations of these commodities.

Researchers such as Ajzen and Peterson (1988) and Peterson, Driver, and Gregory (1988) have not disputed the use of the contingent valuation

method, but they have addressed this issue. They have suggested that noneconomic values, such as those of a psychological or sociological nature, should also be measured for the same nonmarket goods to provide a more comprehensive understanding of consumers' valuation of these commodities. Ajzen and Peterson discussed the possibility of using semantic differential scales as a means to measure consumers' attitudes toward nonmarket goods.

The aim of this research project was to use the contingent valuation method to estimate the economic value of a particular nonmarket good in a popular recreation area in Central Saskatchewan. An attempt was also made to explore how consumers' psychological valuations of such an outdoor recreation resource could be measured and included in a contingent valuation study.

This introductory chapter discusses the purposes and significance of this research project. It also presents a description of the study area and a brief outline of the study's data collection and analysis methods. In Chapter II, the literature review presents a discussion of the relevant economic and psychological theories that have been used to form the framework of this research project. A discussion of the research methodology and data collection is provided in Chapter III. The results of the data analysis are presented in Chapter IV and Chapter V is a discussion of the conclusions and implications that can be drawn from these results.

A. Study Purposes

In 1987, the Municipal Council of the Rural Municipality of Lakeland in the province of Saskatchewan initiated steps to redevelop several public beaches in this area (G. Williams, personal communication, March 5, 1988 and November 17, 1988). This beach redevelopment has entailed the upgrading and expansion of various beach facilities. For example, by the summer of 1989, upgrading included the relocation of a parking lot and the improvement of picnic facilities. Beach redevelopment in the near future may involve the possible enlargement of Sunnyside Beach, which is the most popular public beach in the Municipality. Upgrading and expansion of the public beaches, in addition to regular maintenance, which includes garbage removal, upkeep of picnic facilities, and the cleaning of washrooms and change houses, have been attempts made by the Municipality to provide public beach areas that are easily accessible, attractive, and not too congested.

Sunnyside Beach, Sunset Bay, and Neis' Beach are three adjacent public beaches involved in this redevelopment. At present, day visitors, campers, cottagers, and the Municipality's year-round residents use these beaches that are situated on the same lake. In this study, these three beaches create a setting that is referred to as the "public beach environment". The Municipality's efforts to redevelop and regularly maintain its public beaches includes an attempt to provide a public beach environment that is aesthetically appealing to the general public.

The purpose of this research project was twofold. First, by taking

into account only user values, this study was carried out to determine the economic value of the nonmarket good referred to as the aesthetics of the public beach environment. Secondly, this research project was also carried out to explore the relationship between the economic and noneconomic valuations of this public commodity. To do so, and also to assist in estimating a dollar amount that realistically reflected the preferences of both resident and nonresident beach users for this commodity, a psychological measure was incorporated into the design of this study.

The aesthetics of the public beach environment consisted of various attributes (e.g., vegetation, water quality, and cleanliness of facilities) that were believed to affect the attractiveness of this type of recreational setting. The economic value of the aesthetics was determined by using the contingent valuation method. Through the use of questionnaires, beach users were asked how they would value, in dollar terms, a change in the quality of this nonmarket good. More specifically, these individuals were questioned about the amounts of money that they would be willing to pay to avoid a loss in the condition of the public beach environment. This loss in quality involved the deterioration or lack of availability of various features of this particular beach setting. Attitudes toward the aesthetics of this recreation setting were measured using an adequacy-importance model that was developed specifically for this study. This model consisted of two multi-attribute, or semantic differential, scales, each of which was composed of a set of bipolar evaluative scales. The attributes rated in

these scales were various features of the aesthetics of the public beach environment. These features were those that pilot test participants indicated as being the most important when assessing the attractiveness of public beach areas in Central Saskatchewan.

B. The Study Area

The Rural Municipality of Lakeland, No. 521 is a popular recreation and cottage area located in the mixed wood section of the Boreal Forest of Central Saskatchewan (Saskatchewan Department of Rural Development [SDRD], 1987). It is situated adjacent to the southeastern section of Prince Albert National Park and covers an area of 50,217 hectares (SDRD, 1987). The Municipality is a year-round place of residence for approximately 750 individuals and the seasonal home for an additional 7,500 residents (SDRD, 1987). Campers, resort visitors, and day users visit Lakeland primarily in the summer season. Estimates indicate that, approximately, two to three thousand of these nonresident visitors visit the Lakeland area at the same time during peak summer periods (SDRD, 1987). The main economic activity in the Lakeland Municipality is the provision of goods and services to residents and visitors (SDRD, 1987).

A variety of natural resource amenities have made Lakeland a popular location for camping and cottaging and also participation in numerous recreational activities. For example, several lakes in the Municipality provide settings in which individuals can take part in such water-based activities as boating, water-skiing, swimming, and fishing. In addition, various wildlife species (e.g., white-tailed deer, moose,

waterfowl, and songbirds) supply the necessary resources for activities such as hunting and bird-watching, while the Municipality's forests provide a picturesque setting that is conducive to hiking, picnicking, and cross-country skiing.

Residential and commercial development in Lakeland has generally occurred in the shoreline and backshore areas of the Municipality's numerous cottage subdivisions. Year-round and seasonal homes, both permanent structures and trailers, can be found in these residential areas that are situated in various locations around Lakeland's four largest lakes--Anglin, Christopher, Emma, and McPhee. Most residential development exists around the more southerly shorelines of Emma and Christopher Lakes in the Southern Lakes Area of the Municipality (SDRD, 1987). Trailer parks and commercial services such as marinas, grocery stores, and restaurants are also located in many of these subdivisions. Provincial campgrounds and public picnic and beach areas are situated throughout the Municipality. The Village of Christopher Lake, is the area's major service centre.

The public beach environment, which is central to the purposes of this study, is situated along the previously noted southern section of South Emma Lake. The three public beaches--Sunnyside Beach, Sunset Bay, and Neis' Beach--that constitute the public beach environment are located in the cottage subdivisions of Sunnyside Beach, Sunset Bay, and Neis' South, respectively. Although these three public beach areas are situated within a short distance of approximately two and one half kilometres of each other, the actual beaches are not connected along the

shoreline. They are separated by vegetation, cottages, and private beaches.

The Sunnyside beach, Sunset Bay, and Neis' public beaches are found within shoreland areas that have been rated for recreational use by the Canada Land Inventory system. Sunnyside Beach, which is a very popular beach in this part of Saskatchewan, is situated within an area that has a Canada Land Inventory rating of 1 (Ecologistics, 1976). This rating implies that this setting is appropriate for intensive use by individuals participating in activities such as swimming, fishing, day boating, and walking (Department of Regional Economic Expansion [DREE], 1970). Sunnyside is actually "one of the finest, highest rated beach areas" in this part of Saskatchewan (Saskatchewan Department of Rural Development [SDRD], September 1987, p.2). Several additional beaches, which have lower capability ratings for use, are also found along the shores of South Emma and other lakes in the Municipality. The Sunset Bay and Neis' beaches are two of these additional recreation sites. According to the Canada Land Inventory, these beaches are located in a shoreline recreation area that has a moderately high use rating of 3 for participation in activities such as swimming and boating (DREE, 1970).

In 1981, a survey was conducted to examine beach use along the Municipality's lakes and shoreland areas (SDRD, 1987). The findings of this survey included details about the number of beach users at the Sunnyside Beach, Sunset Bay, and Neis' Beach public beach areas during two summer weekends. The Sunnyside Beach and Sunset Bay sites were found to have peak use levels of 475 and 95 individuals, respectively,

while Neis' Beach was noted as not having any users at all. At that point in time, this latter beach was found to be poorly maintained.

As noted earlier, in 1987, the Lakeland Council initiated the process to redevelop several of the Municipality's public beaches. Problems such as the lack of beach maintenance, high use levels at Sunnyside Beach, and insufficient facilities (e.g., the lack of proper parking, washroom, and picnic facilities) prompted the Council to consider improving the quality of several of the Municipality's public beach areas. Along the shoreline of Emma Lake, the Sunnyside, Sunset Bay, and Neis' beaches, as well as, other public beaches (i.e., McIntosh Point, McPhail Cove, and Birch Bay, Stage One) have been included in these efforts to improve and enhance public beach areas. These endeavours were designed to assist in creating public beach areas that were attractive and suitable for use by both present users and anticipated additional numbers of users in the future (SDRD, September 1987).

The McIntosh Point, McPhail Cove, and Birch Bay public beaches are generally the most accessible to residents of the McIntosh Point, McPhail Cove, and Birch Bay Stage One subdivisions in which these beaches are located. The Municipal Council hoped that by redeveloping such beaches, residents of these three subdivisions would be encouraged to increase their use of these latter beaches and, at the same time, lessen their present and future use of the already heavily used Sunnyside Beach. Similar reasoning was also applied to support the redevelopment at the Sunset Bay and Neis' public beach areas (G.

Williams, personal communication, November 17, 1988). This redevelopment was also an attempt to attract additional numbers of nonresident beach users to these two latter recreational areas and, at the same time, assist in lessening of the numbers of this type of visitor at Sunnyside Beach.

By the summer of 1989, various beach redevelopment projects had taken place in the public beach environment. For example, in 1988, Neis' Beach was upgraded. Beach nourishment (i.e., the artificial enlargement of the actual sand beach by bringing in sand) had been carried out and parking spaces for approximately 65 vehicles had been created. Also, Weyerhaueser Park, a fenced picnic area with such facilities as picnic tables, benches, and barbecues, had been developed at the east end of this beach, while another picnic area had been set up at the west end.

In 1988, facilities such as washrooms, change houses, picnic areas, and parking facilities had also been upgraded at the beaches at both the Sunnyside and Sunset Bay subdivisions. At the former site, a parking lot with spaces for approximately 100 vehicles had been developed at a location not visible from the water. (The original parking lot that was located next to the beach area had been changed into residential lots.) A drop-off area was also developed by the beach and the picnic area. At the Sunset Bay public beach, beach nourishment had also been carried out and parking spaces for approximately 17 vehicles had been developed.

The public beach areas at the Sunnyside Beach, Sunset Bay, and Neis' South subdivisions have been grouped together into the public

beach environment in this study for certain reasons. First, as was noted earlier, these three beaches are located within a driving distance of two and one half kilometres from each other. Therefore, within a relatively short distance beach users have three beaches from which to chose to visit once they are in this part of the Lakeland area. In essence, these three public beach areas can be considered as making up one recreation site in which individuals have a variety of specific locations to visit. Secondly, the proximity of each of these three beaches to one of the main roadways (i.e., Highway 263) in the Lakeland Municipality also makes each area easily accessible to members of the general public. This easy access may be especially important for nonresident beach users who may not be that familiar with the area. This is a necessary consideration given the fact that all three beach areas in the public beach environment have been redeveloped and are regularly maintained with the intention of attracting nonresident users.

Policies presented in the Lakeland Development Plan (SDRD, September 1987) provide guidelines for development in the Municipality during the five year planning period of 1988 to 1992, inclusive. The redevelopment of the three beaches in the public beach environment has occurred within the context of such guidelines. In particular, the policies for public reserve management and development at the Sunnyside, Sunset Bay, and Neis' South subdivisions have helped to form a basis for this redevelopment. The former policies affect the general maintenance of these beach areas and the development of new facilities (e.g., picnic tables, washrooms, and change houses), while the latter incorporate

beach redevelopment in terms of the overall development of each subdivision. For example, the South Emma Development Concept discusses the possible enlargement of the public beach area at the Sunnyside Beach subdivision in relation to future residential and commercial development. As construction is expected to increase, future redevelopment and enlargement of the public beach to accommodate increased numbers of users is suggested. Similar guidelines are presented for the Neis's South subdivision.

C. Significance of the Study

This research project examined the theoretical foundations of contingent valuation studies. It was used as an attempt to contribute to the understanding of how the disciplines of psychology and economics could be applied together to better comprehend consumers' dollar valuations of a nonmarket good. The results of this study were also intended to have practical implications for the Lakeland Municipality.

A psychological measure was included in this study to explore the ideas presented by Ajzen and Peterson (1988). These researchers suggested that a particular psychological measure could be used to estimate the noneconomic values of nonmarket goods. They pointed out that consumers' attitudes toward such a good could be determined by using semantic differential scales. This study examined one means of incorporating these scales into a contingent valuation study.

Peterson, Driver, and Gregory (1988) noted that the determination of psychological or sociological values for nonmarket goods would be a

logical development in the construction of contingent valuation studies due to the fact that the disciplines of psychology, sociology, and economics all deal with the study of human behaviour. An attitude measure was included in this study as an attempt to link psychology to the economic assessment of nonmarket commodities. Not only was the concept of attitude used to gain a more comprehensive understanding of how a psychological measure could be incorporated into a contingent valuation study, but emphasis was also placed upon examining the attributes of a nonmarket commodity. Consumers' perceptions and preferences of these attributes were also used to enhance understanding of how theories in both economics and psychology could assist in estimating values of nonmarket goods.

The results of this study may also have practical implications for the Lakeland Municipality. The estimation of an economic value for the aesthetics of the public beach environment may assist municipal officials to understand more fully the importance of public beach settings in the Municipality's economic infrastructure. Various findings of this study may also assist in the achievement of those municipal planning and development objectives that are not of an economic nature. The Lakeland Development Plan (September 1987) presented five different areas of concern--economic base, environmental protection and enhancement, senior government involvement, community services, and development--for which general planning objectives have been stated. (These general objectives are presented in detail in Appendix I.)

The Municipality's general economic objective states that a strong local economy should be developed by creating an attractive environment for business endeavours, especially those related to the tourism industry (SDRD, September 1987). As previously noted, the main economic activity in the Municipality is the provision of goods and services to both residents and visitors. Therefore, because tourism already plays an important role as an export industry in the Municipality's economy, and is expected to do so in years to come, efforts should be undertaken to ensure that both present and future tourism related endeavours continue to be a significant aspect of this area. The Municipality, as the producer of an environment that could play a major role in the supply side of this tourism industry, should ensure that a setting capable of attracting tourists and tourism dollars is created and maintained. Such an environment (i.e., a factor of production in this export industry) should be provided through economically efficient activities, and should be composed of various features that are demanded by tourists.

The public beach environment belongs to this setting that is intended to attract tourism related businesses. The aesthetics of the public beach environment constitute an important facet of the tourism industry of the Lakeland area. They provide a commodity that is used as a factor of production in the Municipality's tourism industry. The production of this input should be economically efficient so that local municipal funds are used wisely and social welfare is maximized.

Through a study such as this, an estimate could be made of the

primary dollar benefits of a public project designed to provide a nonmarket good such as the aesthetics of the public beach environment. These benefits could then be used as a dollar value for producers surplus in a benefit-cost analysis to determine the economic efficiency of the Municipality's efforts to produce an attractive public beach setting during the summer months The resulting benefit-cost ratio could then be compared to similar ratios for other economic activities, which could use the resources of this same setting to produce goods that could be valued easily in the marketplace. The efforts to redevelop and maintain the three public beaches could then be more easily incorporated into the allocation decisions regarding the use of the Municipality's natural resources and public lands.

The estimation of the economic value of the aesthetics of the public beach environment may also assist in the achievement of the Municipality's environmental protection and enhancement objective. If the efforts to redevelop and maintain public beaches could be shown to be economically efficient, then, possibly, the efforts to protect such features as water quality and natural vegetation in the beach areas could be strongly supported. Such actions could help to protect the natural environment that has initially attracted people to live and visit the Lakeland Municipality.

The findings of this study may also provide municipal planners with a better understanding of the features of public beach areas that would enhance the attractiveness of such settings, and in turn, may assist in attracting tourists to the Lakeland area. At the same time, these

findings may also help to achieve various aspects of the Municipality's community services and development objectives that involve the provision and development of recreational facilities to benefit both residents and nonresidents. The development and use of the multi-attribute scales of the adequacy-importance model will help to determine individuals' perceptions and preferences of such features. These findings would provide information about those features that people would expect to find in public beach settings in Central Saskatchewan and, also, how individuals perceived the existing features at the Sunnyside, Sunset Bay, and Neis' beaches. A better understanding would then be gained about the attributes of the aesthetics of the public beach setting that people would demand when consuming such a nonmarket good. Indications would also be provided as to which features may need improvement so that the recreational experiences of beach users could be enhanced. The provision of preferred attributes may not only bring tourists and their export dollars to the Lakeland Municipality. It may also assist in attracting and keeping seasonal and year-round home owners, both of whom pay municipal taxes, in the Municipality.

The final general planning objective for the Municipality deals with the involvement of provincial and federal governments in the development of the Municipality. An area of specific concern is the assistance that these governments may provide in the development of beach areas. If a beach redevelopment project, such as the one focused upon in this study, could be shown to be economically efficient, then senior government support for additional beach redevelopment projects

could possibly be attained in the future. Such assistance could come in the form of dollar grants for the wages of workers (similar to those used to pay the individuals that helped in the development of Weyerhaueser Park a Neis' Beach) or as expertise from government departments that deal specifically with resource management or tourism and economic development. However, before any such economic efficiency could be determined, the primary dollar benefits of any efforts to redevelop public beach areas would have to be determined.

D. Assumptions

For the purposes of this study, the following assumptions were made:

(1) As consumers, beach users were assumed to want to maximize the utility, or satisfaction, that they could derive from the consumption of the aesthetics of the public beach environment;

(2) The hypothesis of diminishing marginal utility was assumed to be applicable in this study. This implies that as a beach user increased his or her consumption of the aesthetics of the public beach environment, the value of the last additional unit consumed of this nonmarket good was expected to be less than that of the previous unit; and

(3) The existence of an attractive public beach environment is related to the existence of various economic activities. Such activities include the purchasing of seasonal and year-round homes and the provision of goods and services to residents, tourists, and other

visitors in the area.

E. Delimitations of the Study

The following delimitations were established for this study:

(1) The survey was conducted during the six week period of July 1, 1989 to August 11, 1989; and

(2) Only user values were determined to estimate the dollar benefits of the aesthetics of the public beach environment. Data was not collected in this study to calculate the nonuser, or preservation, values (i.e., option, bequest, and existence values) of this nonmarket commodity.

F. Limitations of the Study

(1) The findings of this contingent valuation survey are not applicable to any other public beach setting due to the fact that the public beach environment is unique to the Lakeland Municipality. The theoretical framework that was used to form the basis of this study however might be used in other research projects.

(2) The multi-attribute scales that were developed in this study are not suitable for use when measuring attitudes toward the aesthetics of those public beach areas not located in Central Saskatchewan. The pilot test, which was used to determined the attributes that would be included in these scales, only questioned potential consumers about those features that affected the attractiveness of public beach areas in Central Saskatchewan. Therefore, the multi-attribute scales, which are

composed of ten of these features, cannot be used to measure attitudes toward the aesthetics of those public beaches that are situated in other geographical locations.

(3) The dollar benefits of the aesthetics of the public beach environment estimated in this study may be understated for various reasons. First of all, the sample of survey participants was not representative of all possible resident and nonresident beach users in the Lakeland Municipality. This sample consisted only of those individuals who either resided in the Sunnyside Beach, Sunset Bay, and Neis' South subdivisions and those nonresident users who were actually at any of the three beach areas in the public beach environment during the survey time period. Therefore, the possible valuations of the aesthetics of the public beach environment that could have been elicited from residents of other subdivisions or from the nonresident users of other public beach areas in the Municipality were not included in the final estimate of the value of this nonmarket good.

A survey sample that was representative of the entire population of residents and visitors in the Lakeland Municipality was not used for specific reasons. Information provided by the municipal reeve helped to initiate the decision to include in this sample only those residents of the Sunnyside Beach, Sunset Bay, and Neis' South subdivisions. The point was made that residents were generally only concerned about the upkeep of the public beach areas found in the subdivisions in which they resided and not with the conditions of other public beaches in the Municipality (G. Williams, personal communication, March 5, 1988). If

these residents were not too concerned about and, possibly not too familiar with, the beach areas of the public beach environment, then these individuals may not have been able to value this area's aesthetics in a realistic fashion. Therefore, they were excluded from the survey sample. Similarly, the decision was made to exclude nonresident visitors at other municipal beach areas located outside of the public beach environment. If these individuals were not using the Sunnyside, Sunset Bay, and Neis' South public beach areas, then, possibly, they also would not be too concerned or too familiar with these recreation sites. As a result, these nonresident visitors also may not have been able to provide realistic valuations of the aesthetics.

Secondly, the economic value of the aesthetics of the public beach environment may also be underestimated because of the fact that this commodity was only valued for the benefits that could be realized from its consumption during the summer season. The value of this nonmarket good was not estimated for its use during other times of the year.

Thirdly, the economic value of the aesthetics of the public beach environment might be undervalued due to the fact that only user values were determined. By omitting from the survey questionnaire, questions about the dollar amounts of nonuser values (i.e., the preservation values referred to as existence, option, and bequest values) that people might be willing to pay may have caused these dollar benefits to be underestimated. Such values could have been elicited from the beach users who participated in this contingent valuation study and, also, from those individuals who would not use the three public beaches but

would value the presence of such recreational areas.

G. Data Collection and Analysis

Data was collected and analyzed at two different stages in this study. Initially, in the spring of 1989, a pilot test was conducted to select the features of a public beach area that were used to construct the multi-attribute scales of the adequacy-importance model. Respondents were surveyed using both interview and questionnaire techniques to determine which features were considered to be the most important when evaluating the attractiveness of a public beach area in Central Saskatchewan. Content analysis was used to analyze these qualitative responses. Once the attitude scales were developed, they were incorporated into the questionnaires that were used during the summer of 1989 to collect data for this contingent valuation study. This latter data was analyzed using multiple regression analysis. Content analysis and a chi-square nonparametric test were used to examine written comments provided by survey participants on the contingent valuation questionnaires.

Participants in the pilot test included those individuals who represented either potential users of any public beach area in Central Saskatchewan or those persons who dealt with such concerns as natural resource management and tourism development in the Rural Municipality of Lakeland. Survey participants who completed the contingent valuation questionnaire were actual users of the public beach areas at the Sunnyside Beach, Sunset Bay, and Neis' South subdivisions during the

summer of 1989. These beach users consisted of nonresident visitors (i.e., day visitors and campers) at these to the public beach areas and also year-round and seasonal residents of the Sunnyside Beach, Sunset Bay, and Neis' South subdivisions. In the willingness-to-pay question, all respondents were asked to make contributions to a Special Fund from which monies would only be used to maintain and upgrade the three public beach areas in the public beach environment.

Chapter II: Literature Review and Theoretical Framework

This chapter presents a discussion of both the existing contingent valuation research and the relevant aspects of economic theory that have been used to form the framework of this study. It also discusses the theoretical foundations that support the inclusion of a psychological measure.

Economic theory is used to discuss the framework in which the primary dollar benefits of a nonmarket good can be measured. This discussion also explains how the contingent valuation method can be used to determine these dollar values. A review of previous contingent valuation studies highlights various sampling considerations and also certain factors such as biases and determinants of demand that may affect consumers' valuations of nonmarket goods. The determinant of demand referred to as the taste and preference variable is focused upon in detail by using psychology's expectancy-value theory. Discussion is presented as to how an adequacy-importance model, which has been derived from another model of semantic differential scales based on the expectancy-value theory, can be used to determine consumers' attitudes towards a nonmarket good being valued in a contingent valuation study. The attributes of the nonmarket good are viewed as the factors that help to form consumers' favourable or unfavourable dispositions toward these commodities.

A. Contingent Valuation Studies and Economic Theory

Veeman (1985) has discussed the basic principles of economic analysis that should be applied to those social projects that assist in the management of public lands and natural resources. He presented the four types of values for benefits and costs that Howe (1971) noted could result from the production of goods and services when public lands and natural resources are used as inputs. These four values were described as follows:

(1) economic values for which market prices exist and for which these prices correctly reflect societal opportunity costs or true scarcity values; for example, farm or timber outputs which are not price supported

(2) economic values for which market prices exist but for which the prices fail to reflect appropriate scarcity values or shadow prices; for example, price supported commodities or labour inputs that would otherwise be unemployed

(3) economic values for which no market prices exist but for which appropriate social values can be approximated in money terms, by inferring what consumers would be willing to pay for the product or service, either through direct surveys or indirect techniques such as the Hotelling-Clawson-Knetsch method of extra-market benefit estimation;

for example, forest-based recreation or hunting and fishing

(4) values for which it would be difficult to imagine any kind of market-like process capable of registering a meaningful monetary valuation; for example, the preservation of a beautiful view, historic site or way of life, or the destruction of a unique riverscape (Veeman, 1985, pp. 18-19).

Veeman (1985) noted that allocation decisions about the use of public lands and natural resources must take into account the third and fourth types of values even though such values are not as easily estimated as the first and second in the marketplace. Although he noted that dollar values could be imputed for the nonmarket benefits and costs discussed in the third category, he stated that the extra-market values in the fourth category could only be valued in qualitative terms because these latter values are not commensurable.

Attempts to measure the dollar benefits of those environmental commodities that can be included in the fourth category have been carried out using various techniques. (Some of these methods have been included among those that can estimate the value of nonmarket commodities in the third category.) The travel cost method, hedonic pricing, and the contingent valuation method have been used to estimate the economic values for nonmarket goods (Just, Hueth, and Schmitz, 1982). The use of the travel cost method and hedonic pricing involves

imputing travel costs and real estate values, respectively, for the values of these commodities. The contingent valuation method, on the other hand, directly questions consumers how they would value nonmarket goods in monetary terms.

Various researchers have used the contingent valuation method to estimate the dollar values of changes in the quality of different environmental commodities. For example, Randall, Ives, and Eastman (1974) valued the benefits of the abatement of aesthetic environmental damages caused by a mine and a power plant, while Brookshire, Ives, and Schultze (1976) measured the benefits of pollution-abatement associated with power plants alone. Both groups of researchers measured environmental aesthetics consisting of two components: visual impacts and visibility. In another study, Rowe, D'Arge, and Brookshire (1980) valued the proposed visibility reductions in the Four Corners Region of the Southwest United States. Another environmental commodity was valued by Thayer (1981) when such damages as visual impacts, decreases in air quality, and increases in noise levels, which could be caused by the construction and operation of a geothermal power plant, were considered. In further research, the benefits of improved water quality were estimated by Greenley, Walsh, and Young (1982) for the South Platte River Basin in northwestern Colorado and, also, by Desvousges, Smith, and Fisher (1987) for the section of the Monongagela River located in the state of Pennsylvania. These researchers used the contingent valuation method to measure the dollar values of changes in the quality of these environmental commodities.

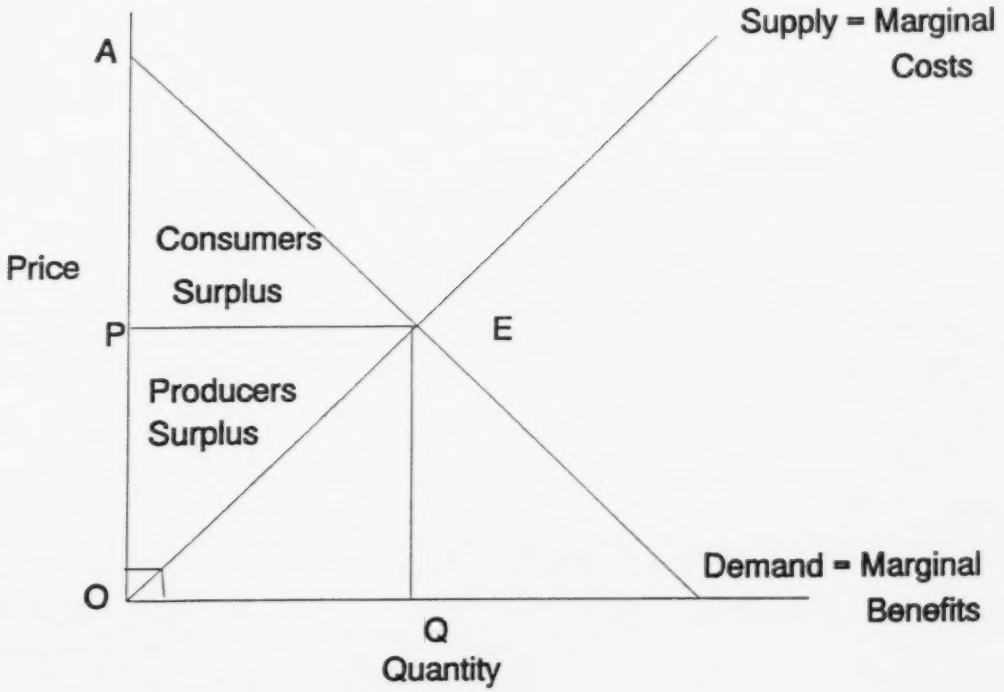
Researchers have also used this method to measure the economic value of other nonmarket goods. For example, Cicchetti and Smith (1973) determined such a value for wilderness experience, while Walsh, Gillman, and Loomis (1982) estimated the preservation values of wilderness resources for both Colorado and the entire United States. In addition, Walsh, Miller, and Gilliam (1983) valued recreation experience at existing ski hills if new skiing areas were opened to reduce problems of congestion at the original sites. The economic value of six Rhode Island beaches was measured by McConnell (1977).

The economic activities that produce the nonmarket commodities that have been valued by these researchers are often excluded when allocation decisions about the use of environmental resources have to be made. Veeman (1985) noted that such decisions about the use of public lands and natural resources must take into account all types of benefits and costs even though such values may not be easily estimated in the marketplace. By doing so, he noted, the use of these public resources would be more economically efficient and the benefits to society would be greater.

If the dollar value of the benefits of a nonmarket good such as aesthetics could be estimated in the marketplace using the same processes that determine the values of those goods in the first and second categories, then this value could be represented in a diagram such as the one in Figure II-1. Assuming that all consumers would want to maximize the utility or satisfaction that they could receive from the consumption of a particular commodity and that the hypothesis of

diminishing marginal utility applies (hence, the downward slope of the demand curve), E is a point of equilibrium. At this point, marginal benefits equal marginal costs, and the consumer of lumber, which is a market good, would maximize the total dollar benefits that could be gained from the consumption of this good when quantity, Q, is consumed at price, P. These total dollar benefits are represented by area OAEQ, while the net dollar benefits are represented by triangle PAE.

Figure II-1



SUPPLY AND DEMAND CURVES
FOR A MARKET GOOD

This latter area, which is found below the demand curve and above the price line, is also known as consumers' surplus. These are the net benefits that the consumer would receive from the consumption of this commodity at Q and P once the price that the consumer paid for these goods (i.e., area OPEQ) is subtracted from the total benefits (i.e., area OAEQ). The consumer would not pay for these excess benefits, but theoretically would be willing to pay this dollar value to enjoy the satisfaction received from the consumption of this good at the given price and quantity (Lipsey, Sparks, and Steiner, 1976). These benefits represent the maximum marginal utility that could be realized. It is this consumers' surplus value that would be used as the primary dollar benefits in a benefit-cost analysis to determine the economic efficiency of a social project.

Triangle POE, which is the area below the price line and above the supply curve in Figure II-1, represents a dollar value for producers surplus. This is a measure of net gross receipts earned by a producer once total variable costs have been subtracted from gross receipts (Just, Hueth, and Schmitz, 1982). This value is equal to the value of consumers' surplus, or triangle PAE, when quantity Q is consumed at price P. If nonmarket goods could be valued in the marketplace, then the producers of nonmarket goods (e.g., provincial governments that preserve scenic views in provincial parks) could use this producer surplus value as the numerator in a benefit-cost analysis.

Nonmarket goods lack certain characteristics or traits that allow them to be valued in the marketplace. As a result, the determination of

the net benefits that could be incorporated into a benefit-cost analysis is not a straightforward task. Commodities such as lumber, fish, and fur, which have been produced form various natural resources and which Veeman (1985) noted could be valued in private markets, can be included in that group of goods and services described by Randall (1987) as being rival and exclusive. Such goods are divisible and, therefore, the total quantity of these goods can be divided into units from which consumers can purchase varying amounts. Rivalry occurs when one person's consumption of a certain quantity of that good lessens another individual's consumption of that same commodity because fewer units are available for purchase. For example, if twenty sheets of plywood are available for purchase in a lumber yard, and the first customer of the day buys 10 sheets, then, there are only a total of 10 sheets left for the second customer to buy. This latter individual never had the chance to purchase 20 sheets of plywood in total because the other customer bought the first 10 sheets. An individual's purchase of this plywood also gives him or her exclusive ownership of this commodity. Along with this ownership, a person receives the property rights to this good to state that it belongs only to him or her.

On the other hand, those goods such as aesthetics or water quality, which are of an extra-market nature, are referred to by Randall (1987) as nonrival and nonexclusive goods. Nonrivalry in consumption implies that the same quantity of a good is available for all person's to consume, and that one person's consumption of that good cannot lessen the consumption of that same good for another person. This point is

illustrated in an example presented by Randall (1987): "If I am viewing an attractive scene alone, the scenic beauty available to me will not be diminished by 50 percent when I am joined by another observer" (p.169). He also stated that "nonrivalry is a physical attribute of the affected good" (p.169). Therefore, a commodity such as a scenic view is not a good that can be divided and the resulting units sold to different consumers. Instead, it is a commodity that exists as one whole unit and must be consumed by all consumers as such. These consumers cannot compete for its consumption. (Although, this point could probably be disputed when the factor of congestion is taken into consideration.)

Nonexclusiveness is defined by Randall (1987) as the attenuation of property rights. Without property rights, an individual does not gain ownership of a good when it is consumed. For example, when a person enjoys a scenic view, he or she does not become owner of this commodity. Randall also noted: "Without exclusion, it is impossible to collect a price for use" (p.165). In such an instance, prices cannot be used to allocate goods to specific consumers who would be willing to pay certain prices for those goods, or prices cannot be used to determine the quantities that would be supplied for consumption. Prices cannot be paid to gain exclusive ownership of such goods to prohibit other persons from purchasing them.

The characteristics of nonrivalry and nonexclusiveness do not permit nonmarket goods such as aesthetics and water quality to be valued in the marketplace. As a result, ordinary demand curves, which are developed when different prices are used in the determination of the

quantities of good and services demanded, cannot be derived (Bradford, 1970). Although, Bradford did note that bid curves for individual consumers of nonmarket goods could be derived, and that such curves could eventually be aggregated into one demand curve for society. Then, the total and net dollar benefits gained by society from the consumption of such a good could be estimated.

Due to the fact that different prices cannot determine the quantities of nonmarket goods that could be supplied, Bradford (1970) stated that such quantities are predetermined by the producers and represented by a given level of the quality of the good. This level of quality ultimately represents a fixed supply of that good. When the value of such a nonmarket good is to be determined, a specific quantity (i.e., a change in quality) of this good is presented to consumers who will then state how much that good is worth to them in dollar terms. These values that are elicited from consumers can be used as values of consumers' surplus or the net dollar benefits derived from the consumption of these nonmarket goods. The contingent valuation approach can be used to estimate these dollar amounts.

Consumers can be asked to value quantities of nonmarket goods that are either increments or decrements in the quality of these commodities. If an increase in the quality of a nonmarket good (e.g., an increase in the quality of the water in a given lake) is to be valued, then the prices would be elicited from consumers in terms of their levels of willingness-to-pay (WTP). Such values would represent the amount of income that these consumers would be willing to give up to avoid a loss

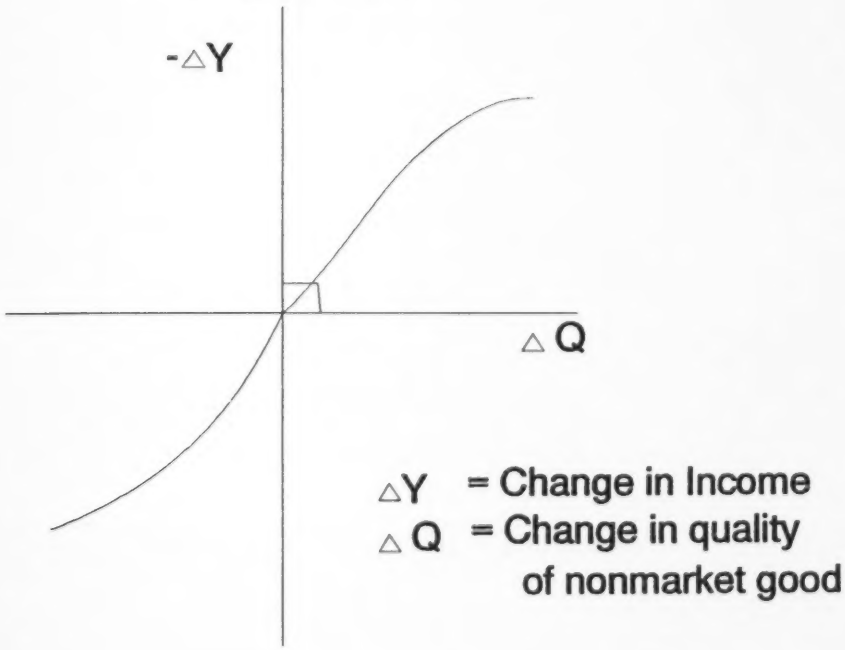
in quality of a particular nonmarket good. On the other hand, if a decrease in the quality of a nonmarket good (e.g., a decrease in the quality of the water of a given lake) is to be valued, then prices would be elicited from consumers in terms of their levels of willingness-to-accept (WTA). These values would reflect the amount of money that individuals would be willing to accept in compensation if a decrease in the quality of a particular nonmarket good should occur. Both WTP and WTA amounts can be used to reflect values of consumers' surplus.

In the absence of traditional markets, the increases and decreases in the quality of nonmarket goods are portrayed in hypothetical markets or situations (Randall, Hoehn, and Brookshire, 1983). The contingent valuation method is used to present these markets to consumers. Such markets describe the changes in the quality of the goods in question and also ask consumers to state their levels of WTP and WTA. Various vehicles of payment are used to assist in indicating the amounts of money that people would be willing to give up to avoid a loss in the quality of a particular nonmarket good. Examples of these vehicles of payments include user fees, utility bills, and sales taxes.

When WTP and WTA values are elicited from a consumer for different levels of quality of a particular nonmarket good, they can be used to derive a bid curve for that individual (Bradford, 1970). This curve is illustrated in Figure II-2. The horizontal axis in this diagram represents changes in the level of quality of a nonmarket good. Decrements in quality are shown to left of the origin, while increments are illustrated to the right. Changes to income are represented on the

vertical axis. Such changes above the origin indicate the WTP values that would be paid to avoid given losses in quality of a nonmarket good. Conversely, changes in income below the origin represent the WTA amounts that an individual would accept in compensation when decrements in quality cannot be avoided. This curve passes through the origin because Bradford assumed that an individual would not be willing to pay any money at all when there was no change in the quality of the nonmarket good.

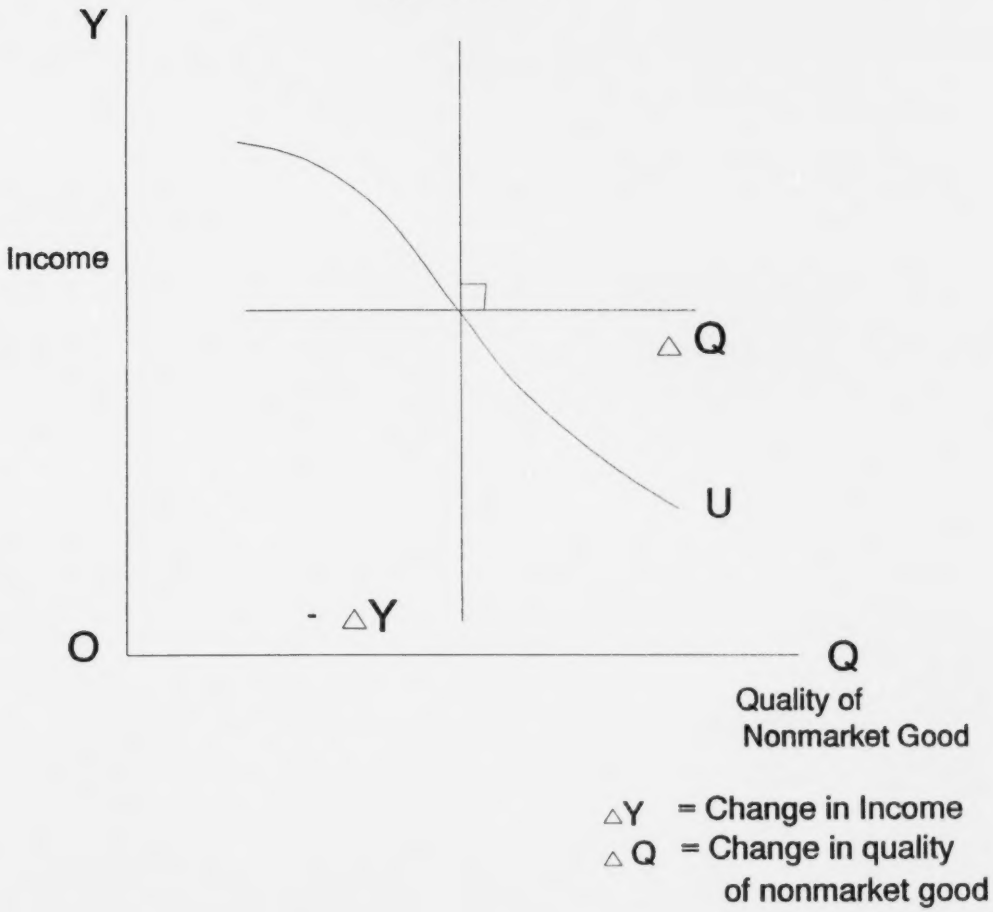
Figure II-2



INDIVIDUAL BID CURVE

Bradford (1970) also indicated that a bid curve could be reoriented to resemble an indifference curve. This curve could be used as an individual's demand curve for a nonmarket good. Figure II-3 is an illustration of such an indifference curve. The slope of this bid curve is the marginal rate of substitution, MRS, of income for a change in the quality of the good. Any of these MRS points represent a point of equilibrium where an individual's utility or satisfaction derived from the consumption of a given level of quality of the nonmarket good is maximized. This level of utility remains constant along the indifference curve. Thus, implying that as an individual is presented with various quantities of a nonmarket good to be priced, he or she will be willing to either accept or give up certain amounts of money to ensure that the marginal utility from the consumption of any given quantity of that good is always maximized at the same level. This individual indifference curve, on which utility remains constant when income changes, is also referred to as a compensated or Hicksian demand curve (Bradford, 1970).

Figure II-3



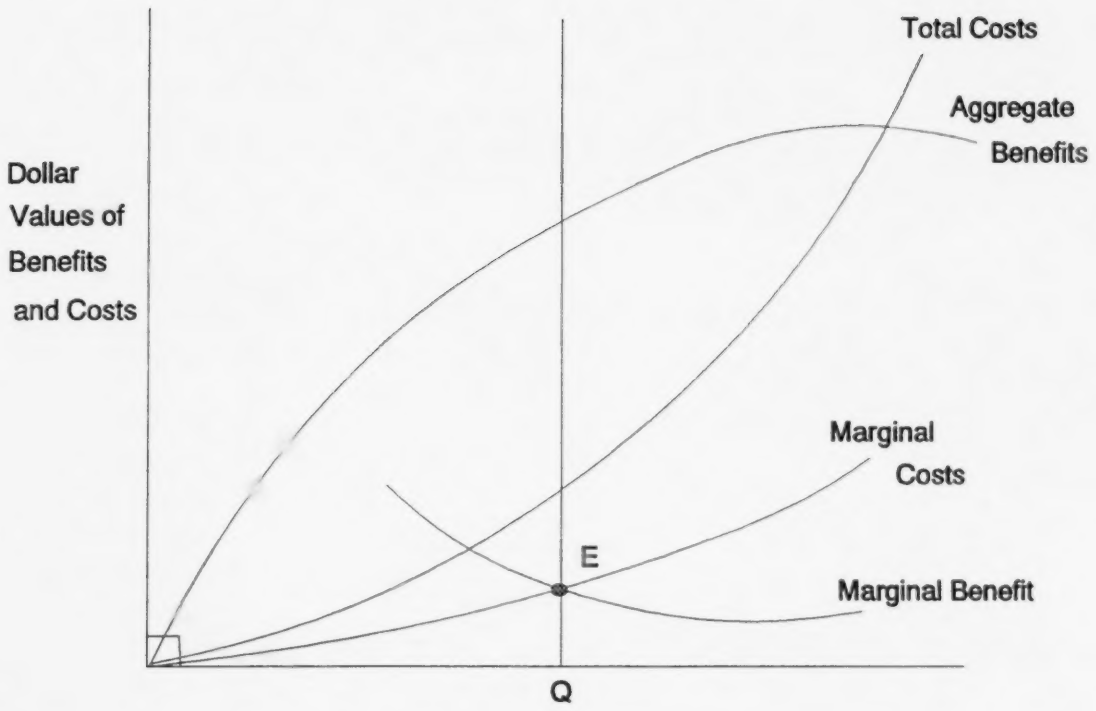
INDIVIDUAL INDIFFERENCE CURVE

The income adjustments of compensating and equivalent variations can represent values of WTP, WTA, and consumers' surplus when a compensated demand curve is used in economic analysis. Compensating variation refers to "the amount of income which must be taken away from

a consumer (possibly negative) after a price and/or income change to restore the consumer's original welfare level" (Just, Hueth, and Schmitz, 1982, p.85). Equivalent variation, on the other hand, is "the amount of income that must be given to a consumer (again possibly negative) in lieu of price and income changes to leave the consumer as well off as with the change" (Just et al., 1982, p.85.) Willig (1976) noted that equivalent and compensating variations represent consumers' surplus values if the income effect is small. (Income effect refers to the effect that changes in income and prices may have on the quantity demanded of various commodities (Just et al., 1982).)

The net economic benefits that can be derived by society from a given change in the quality of a nonmarket good can be estimated beginning with the vertical summation of individual indifference curves into an aggregate benefit curve (Bradford, 1970). (Horizontal summation of the individual curves is not possible because consumers are asked to value a given amount of the quality of a nonmarket good and not how many units that they would purchase at given prices as with market goods.) Then, the marginal benefit and cost curves can be determined by finding the first derivatives of both the aggregate benefit curve and the aggregate curve for the costs incurred to achieve the given level of quality of the nonmarket good. These aggregate and marginal curve are presented in Figure II-4.

Figure II-4



AGGREGATE BENEFIT
AND COST CURVES

The net economic benefits that could be gained by society from the consumption of the given level of quality of the nonmarket good are maximized at point E in Figure II-4. At this point of equilibrium, the difference between aggregate benefits and aggregate costs is maximized and marginal benefits equal marginal costs. Although this point

represents a position of efficiency, it probably does not reflect a Pareto optimal position (Greenley, Walsh, and Young, 1982; and Randall, Ives, and Eastman, 1974). (A position of pareto optimality refers to a point of equilibrium at which resources cannot be reallocated without making some individuals worse off than others (Lipsey, Sparks, and Steiner, 1976).) The marginal benefit curve was derived from an aggregate benefit curve composed of individual indifference curves, each representing differing levels of utility or different marginal rates of substitution. As a result, the marginal benefit curve is a Marshallian demand curve, which reflects differing levels of utility, when income remains constant as different quantities are demanded at varying prices (Just, Hueth, and Schmitz, 1982). Therefore, to find a position of Pareto optimum for society, the corresponding Hicksian income adjustment would have to be determined to represent a value of consumer welfare.

Not only are dollar values of the changes of quality of nonmarket goods elicited from many different individuals, but they are also determined for various groups of people. WTP and WTA amounts have been elicited from different groups of individuals in society in previous studies. For example, Brookshire, Ives, and Schulze (1976) used the four subsamples of local residents, motel visitors and passersby, developed campground visitors, and remote campers so that differences between these groups could be examined. In another study, Randall, Ives, and Eastman (1974) divided a population, which was heterogeneous in nature and which was affected by environmental damage in the Four Corners Region, into three groups--Indian reservation residents,

nonreservation residents, and tourists. This latter group of subsamples was formed on the basis that different vehicles of payment would be more appropriate and realistic to use with different groups of individuals. Electricity bills were used as a vehicle of payment for the nonreservation residents who were accustomed to paying such costs. Sales taxes were used for reservation residents because most of these individuals did not pay electrical charges in the study area, but were accustomed to paying these taxes. User fees were the vehicle of payment for tourists because these individuals would probably be familiar with paying these charges as they travelled.

The dollar benefits that can be elicited from various individuals through the use of the contingent valuation method and that can be used to determine one point on a demand curve for a nonmarket good may be affected by such factors as hypothetical, information, and strategic biases (Rowe, D'Arge, and Brookshire, 1980). In addition, Rowe et al. (1980) noted that factors such as income, race, length of residency in a given area, and other determinants of demand could also influence the WTP and WTA amounts stated by consumers.

Rowe, D'Arge, and Brookshire (1980) defined hypothetical bias in contingent valuation study results as "the potential error due to not confronting any individual with a real situation" (p.6). When such a bias occurs, the nonmarket good is not clearly or truly described to survey participants. Consequently, these individuals are asked to value a commodity that is neither realistic nor comprehensible. As a result, WTP and WTA values that they provide do not reveal their true

preferences.

Cummings, Brookshire, and Schulze (1986) noted that researchers often do not clearly define the nonmarket commodities that are being valued in hypothetical markets in contingent valuation studies. They indicated that this situation may easily occur because of the intangible nature of these goods: researchers just do not know how to describe and define these commodities that do not have concrete properties. Consequently, the defining of a nonmarket good is left up to the individual survey participants, each of whom will have a different perception of this commodity. Therefore, when a single nonmarket good is being valued using the contingent valuation method, it may be defined in many different terms. As a result, the good that is being valued is not the same for each respondent. Cummings et al. pointed out that this may cause the problem of hypothetical bias.

On the other hand, Freeman (1986) indicated that if a realistic description of a nonmarket good was not provided, an information bias could be present. He noted that the information presented to survey participants in contingent valuation studies affects their perceptions of the nonmarket good being valued. Then, in turn, these perceptions influence participants' dollar valuations of this commodity. Implying, that as the information presented for the same good is changed, so do the valuations of this good. Freeman stated that "it is important to provide a clear and meaningful description of the environmental good of concern" (p.154). A good should be described as realistically as possible, otherwise the problem of information bias may occur. If the

true dollar value of the real nonmarket good is to be estimated, this good has to be described in the most realistic terms. If it is not described as such, the estimated economic value is not reflective of the good's true worth.

Vehicle of payment and strategic biases may also influence the results of contingent valuation studies. A vehicle of payment bias may exist if the type of payment method (e.g., user fees, sales taxes, and utility charges) used in the contingent valuation study influences the WTP and WTA amounts provided by consumers (Rowe, D'Arge, and Brookshire, 1980). When this bias occurs, a survey respondent may not provide a dollar amount that is reflective of his or her true valuation of the nonmarket good because the vehicle of payment is not one that this person feels he or she will ever really pay. For example, day users would not perceive themselves as paying property taxes in an area that they are only visiting. Strategic bias may occur when survey participants state WTP amounts that they hope will influence the results of the contingent valuation study (Rowe et al.). For example, if this bias existed, when survey participants would be asked to state the additional amount of taxes that they would be willing to pay to avoid a loss in water quality of a particular lake, they would provide very low dollar amounts. They would do so to avoid having to actually pay considerably higher taxes in the future.

WTP and WTA values can also be examined in terms of their relationships to various determinants of demand. Different researchers have examined the influences that various factors have had on consumers'

valuations of nonmarket goods. Such factors have included income, costs associated with the nonmarket good, number of visits to the recreation site, substitute goods, and preferences for the nonmarket good.

Notably, income has been a determinant of demand in contingent valuation studies given the fact that consumers are questioned about the amounts of money they would be willing to give up or accept in compensation. This variable was found to be positively related to WTP values in various studies. Such a relationship was noted by Desvousges, Smith, and Fisher (1987), McConnell (1977), Walsh, Gillman, and Loomis (1982), and Walsh, Miller, and Gilliam (1983).

Walsh, Gillman, and Loomis (1982) found that both cost and substitute variables were positively related to the dollar benefits elicited from consumers when using the contingent valuation method in a particular study. These researchers noted that travel and total trip costs were positively related with the preservation values estimated for wilderness in the state of Colorado and, also, that travel costs were positively related to preservation values determined for wilderness in the entire United States. In the same study, Walsh et al. also found a positive relationship between a substitute variable (i.e., the distance travelled to substitute wilderness areas) and these same preservation values. In a different contingent valuation study, another substitute variable (i.e., distance travelled to the next preferred ski area) was also positively related to the WTP values for lift tickets for two popular ski areas in Colorado (Walsh, Miller, and Gilliam, 1983).

Another determinant of demand--a quantity variable--was also

incorporated into the latter contingent valuation study conducted by Walsh, Miller, and Gilliam (1983) to measure the dollar value of recreation experience. These researchers found a positive relationship between this variable and WTP values. The number of annual days skied at an existing site was positively related to the WTP values for one particular ski hill. For two other hills, this relationship was noted as being negative.

Determinants of demand such as income, costs, and substitutes are often included in contingent valuation studies. However, one particular factor that can influence consumption tends to have been omitted from such research. Taste and preference has not been commonly used as an explanatory variable in the literature reviewed.

B. Psychological Theory

A taste and preference variable is a determinant of demand that can account for psychological factors in consumption. Due to its intangible nature it is usually measured using a proxy such as income that can be easily valued in numerical terms (Walsh, 1986). The determination of a direct value for this taste and preference variable was noted by Walsh as being a task that had to be addressed more frequently in economic studies. Such a variable was included in a contingent valuation survey conducted by Walsh, Gillman, and Loomis (1982). These researchers used Likert scales to measure the psychological importance of various wilderness experiences and the reasons why people valued wilderness.

By noting that psychological values of nonmarket goods should also be estimated, Peterson, Driver, and Gregory (1988) and Ajzen and Peterson (1988) have assisted in addressing this issue. These researchers believed that the determination of these values could possibly provide insight into the reasons why people would place certain monetary values on nonmarket goods. They also felt that the estimation of a noneconomic measure of nonmarket goods was one means that could be used to increase the credibility of the results of contingent valuation studies.

The use of a psychological measure in a contingent valuation survey was noted by Peterson, Driver, and Gregory (1988) as being a logical development because the disciplines of psychology and economics both study human behaviour. These two disciplines study why people do what they do. Economics examines behaviour in terms of monetary decisions, while psychology examines behaviour in more intangible terms such as emotion and cognition. The use of a psychological measure in a contingent valuation study is an attempt to include a direct value of a taste and preference variable in an economic study. As a determinant of demand, it can be used to understand more fully why consumers would value a nonmarket commodity as they do in dollar terms.

Ajzen and Peterson (1988) suggested that bipolar evaluative scales could be used to measure the psychological values of nonmarket commodities. More specifically, they noted that these scales could be used to measure consumers' attitudes toward the goods being valued. Fishbein and Ajzen (1975) have defined attitude as "as a learned

predisposition to respond in a consistently favourable or unfavourable manner with respect to a given object" (p.6) (as cited in Iso-Ahola, 1980, p.251). Ajzen and Peterson noted that attitudes toward a commodity are actually "people's perception of the commodity's favourable and unfavourable attributes" (p.72), and that it is the evaluation of positive and negative responses toward these attributes that provides a psychological value for the commodity. These researchers also noted that bipolar evaluative scales could be used to measure these responses toward attributes and, ultimately, determine the psychological value of nonmarket goods.

Various economic literature has suggested that the attributes of goods and services may be important factors when determining the economic satisfaction that could be derived form the consumption of these commodities. In his discussion about new demand theory, Lancaster (1966) stated that possibly when people are valuing goods and services in dollar terms, they may not be valuing the actual commodities, nor the utility or satisfaction that they could receive from the consumption of these items. Instead, these consumers may be valuing the attributes or characteristics of these commodities. Thus, implying that when these individuals are demanding certain goods and services, they are actually stating preferences for these commodities' various attributes as attempts to maximize utility or economic benefits from consumption.

Accordingly, in Figure II-1, where the benefits from the consumption of lumber are maximized at point E when quantity, Q, is purchased at price, P, this maximum utility may not necessarily be

derived from the demand of the commodity called lumber. Instead, it may have been derived from the preference for particular attributes of this market good. Similarly, the WTP and WTA amounts elicited by consumers in contingent valuation surveys may actually reflect these individuals' preferences for particular features of the nonmarket good being valued.

Because attributes may play a role in the valuation of commodities from both a psychological and economic perspective, these characteristics seem to provide a logical perspective from which to consider including a psychological measure in an economic study. If individuals' preferences for the attributes of nonmarket goods are possibly affecting their economic valuation of these commodities, then a better understanding of how these features are valued is needed. The negative and positive evaluations of the attributes of commodities that can be found using an attitude measure are one possibility of doing this. It may be possible to determine which features of a nonmarket good are providing utility, or satisfaction, to consumers and possibly affecting their dollar valuations of these commodities.

Ajzen and Peterson's (1988) discussion about the evaluation of attributes revolved around the foundations of the expectancy-value theory that states the following:

> "...an individual's attitude toward any object is a function of (1) his beliefs about that object (i.e., the probability that the object is related to other objects, concepts, values, or goals) and (2) the evaluative aspect of those beliefs (i.e., the

attitude toward the related objects)

(Fishbein, 1963, p.238).

Therefore, the expectancy-value theory states that "a person's attitude toward an object is a function of his salient beliefs that the object has certain attributes and his evaluation of these attributes" (Ajzen and Fishbein, 1980, p.153). Through the use of these two components of the expectancy-value theory, this single measure can be determined. A value of attitude, A, can be measured as the summation of the products of an individual's beliefs, b, that a commodity has certain attributes and his or her evaluation, e, of each of these attributes:

$$A = \sum (b \times e)$$

A review of the literature in the area of consumer and marketing research revealed that the above formula for attitude measurement could be used with multi-attribute scales (Ajzen and Fishbein, 1980; Bass and Wilkie, 1973; Cohen, Fishbein, and Ahtola, 1972; and Mazis, Ahtola, and Klippel, 1975). These scales assist in the measurement of consumers' attitudes toward, or preferences of, different brands or products. Another multi-attribute model has been derived from the one based on Fishbein's expectancy-value theory. This second model is the adequacy-importance model that was developed by Bass and Talarzyk (1972). Mazis et al. (1975) have indicated that the adequacy-importance model has a better predictability capability than other multi-attribute models that can be used to determine attitudes toward consumer brands and products. These researcher also noted that the adequacy-importance model has been

the model most often used to determine consumer preference.

The attitude measurement in the adequacy-importance model is defined as:

$$A_b = \sum_{i=1}^{N} W_i B_{ib}$$

where:

A_b = the attitude toward a particular brand [or product] b
W_i = the weight or importance of attribute i
B_{ib} = the evaluative aspect or belief toward attribute i for brand [or product] b
N = the number of attributes important in the selection of a given brand [or product] (Bass and Talarzyk, 1972, p.93).

The adequacy-importance model is operationalized by two multi-attribute scales that are each composed of various features of the product or brand for which an attitude measure is being determined. The same features are found in each multi-attribute scale. The features in each of these scales are evaluated in a set of seven-point bipolar evaluative scales referred to as a semantic differential scale.

Semantic differential scales were developed by Osgood, Suci, and Tannenbaum (1957). These researchers derived the semantic differential from the equal-appearing interval scale that was developed in the 1930's by Thurstone to measure attitude towards a given object (Ajzen and Fishbein, 1980). Thurstone attempted to measure "degrees of favourableness and unfavourableness" (Ajzen and Fishbein, 1980, p. 14) about various aspects of the object. The ends of each bipolar evaluative scale are labelled with different pairs of adjectives (e.g., good-bad and pleasant-unpleasant) that can be used to describe the

object in question. The positive adjective (e.g. good) can be found at one end of the scale positive adjective, while the negative adjective can be found at the other end. The positive end is valued as +3 and the negative end is valued at -3. (In the adequacy-importance model, the system of scaling ranges from 1 at the negative end to 7 at the positive end.) The middle position in each scale represents a neutral disposition. The sum of the scores for each bipolar evaluative scale in the set is a measure for attitude toward the object.

Another set of bipolar evaluative scales known as the Likert scale was also derived from Thurstone's attitude measure (Ajzen and Fishbein, 1980). It also measures positive and negative responses towards various aspects of a given object, and tends to consist of five-point scales that have intervals labelled as: agree strongly; agree; undecided; disagree; and disagree strongly (Ajzen and Peterson). In contrast to the semantic differential scale, the evaluative scales in the Likert scale are not all measured with the positive end having the highest score. Ajzen and Peterson indicated that if those items noted as being favourable in an earlier pretest are evaluated with "strongly agree" in the final survey, then a value of 5 is given. A value of 1 would then be given if an evaluation of "disagree strongly" is made. Conversely, if those items noted as unfavourable in the pretest are evaluated as "disagree strongly" in a survey, then a value of 5 would be attributed to such a response and a value of 1 would be given to a response of "agree strongly." The attitude measure is determined by the summation of the evaluations of all the items. The higher the score, the more

favourable attitude is towards the given object.

In one of the multi-attribute scales (or semantic differential scales) of the adequacy-importance model, the attributes of a particular brand or product are evaluated according to the degree of importance (represented by variable W) that an individual places on each attribute when buying a particular product (Mazis et al., 1975). The evaluation of each attribute is indicated on a bipolar evaluative scale. Possible evaluations on this scale include: extremely unimportant; quite unimportant; slightly unimportant; neither unimportant nor important; slightly important; quite important; and slightly important. Values for these evaluations range from 1 to 7 for extremely unimportant to extremely important, respectively.

The other multi-attribute scale is used to measure an individual's belief that the product or brand in consideration has particular attributes (represented by variable B) (Bass and Wilkie, 1973). This measure is determined in terms of satisfaction. Each attribute in this scale is also evaluated on a semantic differential scale. Possible evaluations include: extremely unsatisfactory; quite unsatisfactory; slightly unsatisfactory; neither unsatisfactory nor satisfactory; slightly satisfactory; quite satisfactory; and extremely satisfactory. Values for these evaluations range from 1 to 7 for extremely unsatisfactory to extremely satisfactory, respectively.

Mazis, Ahtola, and Klippel (1975) indicated that the attributes used in a multi-attribute model should be those which reflect consumers' salient beliefs that the product or brand for which attitude or

preference is being measured has these attributes. These researchers noted that if those attributes, which are considered to be most important when the purchase of a certain product is being contemplated, are included in the multi-attribute models, then the predictability of consumers' attitudes is more accurate than the results of attitude studies that have used the attributes of previous research.

The focus group approach is often used for exploratory purposes in marketing research (Advertising [ARF], 1985; Calder, 1977; and Lautman, 1981). Approximately, 8 to 10 people are brought together to discuss and generate ideas about various marketing concerns. Such sessions can be used to determine which attributes are important when deciding whether or not to purchase a particular product or brand (Lautman, 1981). The generation of desired product attributes can be initiated by the asking of the appropriate questions. For example, participants can be asked to simply state which attributes they believe are important when contemplating the purchase of a given good.

Various research that has examined the use of shoreline recreation sites has used certain questions to determine those attributes that play a significant role when assessing preferences for these areas. For example, Peterson and Neumann (1969) asked pilot test participants to identify those features that they liked or disliked when they were shown photographs of beaches in the Chicago area of Lake Michigan. In another study, which focused upon the Green Bay area of the same Great Lake, an open-ended question was used by Ditton and Goodale (1983) in a pretest to determine the characteristics that described the water of this

location. The attributes that were determined in the former study are presented in Table II-1.

Table II-1 presents the attributes or attribute categories that were examined by various researchers when examining the use and preference of certain shoreline recreation areas. Hecock (1970), Nasar (1987), Nassauer (1983), and Peterson and Neumann (1969) focused upon those attributes that were relevant to the locations that were central to their investigations. In attempts to conduct their studies, these researchers did not use the attributes of other areas studied in different research.

In this chapter, the disciplines of economics and psychology were examined to explore how a psychological measure could be incorporated into a contingent valuation study. Special emphasis was placed on understanding how consumers' perceptions and preferences of a nonmarket commodity's attributes and the concept of attitude might be used as a framework for this task. In the following chapter, the development and use of an adequacy-importance model to measure attitudes toward the aesthetics of the public beach environment in this contingent valuation study is discussed.

TABLE II-1

Attributes and Attribute Categories
of Shoreline Recreation Areas Discussed in Previous Research

A. Cape Cod

-accessibility
-facility development
-physical characteristics
    -water temperature
    -average surf conditions
    -gradients
    -beach material
    -topography
(Hecock, 1970)

B. Lake Erie Shoreline, Ohio Area

-land/water transition
-fittingness
-urban/dense
-pleasantness
-nature
-recreation/boating
-residential
-industrial
-park recreation
-rural/spread out
-water/land
-barriers
-autos
-sky
-activities
(Nasar, 1987)

C. Louisiana Gulf Coast

-apparent naturalness
-compatibility of development with its setting
-ephemeral landscape characteristics
   (e.g., weather, boats people, and animals)
-tidiness
(Nassauer, 1983)

D. Lake Michigan Beaches, Chicago Area

-beach size
-sand texture
-sand cleanliness
-degree of crowding
-foliage
-appearance of buildings and neighbourhood adjacent to beach
-water safety measures (e.g., lifeguards)
(Peterson and Neumann, 1969)

Chapter III: Research Methodology and Data Collection

The research methodology and data collection methods that were used for this research project are outlined in this chapter. A discussion is presented about the hypothetical market, the vehicle of payment, survey participants and sampling, and the dependent and independent variables included in the demand function. In addition, the questionnaires that were used for the contingent valuation survey are also discussed, and the distribution of these survey instruments is outlined in the last section of the chapter.

Data collection was carried out at two different stages in order to achieve the purposes of this research project. In Chapter 1, these purposes were noted as being the following: (1) To estimate, using only user values, the economic benefits of the nonmarket good referred to as the aesthetics of the public beach environment; and (2) To incorporate a psychological measure into this contingent valuation study as an attempt to enhance the credibility of the valuation of beach users' preference of this commodity. The contingent valuation survey was conducted to collect data for both of these purposes, while the pilot test was used to assist in developing the psychological measure.

Although the aesthetics of the public beach environment is a nonmarket good, it was treated, to a certain extent, as a market commodity for the purposes of this study. An adequacy-importance model was developed and used in the same fashion as it would be in marketing research that is conducted to determine preferences for consumer goods.

By doing so, the attributes of this intangible commodity could be determined and also examined to gain a more comprehensive understanding of beach users' preferences for these features and their demand for the aesthetics. An aggregate demand curve for society was not determined for this nonmarket good. Instead, only one level of the quality of the aesthetics was valued. Then, the relationships between this dollar amount (i.e., the WTP amount) and such factors as income, substitute beach areas, and the attitude value, which was estimated using the psychological measure, were examined.

A. Dependent and Independent Variables

WTP was used as the dependent variable in a demand function, while the following factors were included as independent variables:

(1) annual before tax household income;

(2) household costs associated with the use of the Sunnyside, Sunset Bay, and Neis' public beach areas;

(3) distance travelled in kilometres from place of permanent residence to a substitute public beach area;

(4) the distance travelled from a place of permanent residence to the public beach environment;

(5) number of day visits that a household or party made to the three public beach areas during the summer season. (The summer season was defined

as being the time period extending from the Victoria Day long weekend in May to the Labour Day long weekend in September.);

(6) beach users' attitudes towards the aesthetics of the public beach environment; and

(7) the socioeconomic factors of age and whether or not a respondent was employed.

The independent variables of income, costs, substitute beach areas, number of day visits, age, and attitude were expected to be positively related to the WTP variable. As income increased, an individual was expected to be willing to forego more of his or her earnings to avoid a loss in the quality of the aesthetics of the public beach environment. Both resident and nonresident participants were requested to provide information about the costs that they incurred when using any of the three public beaches in the public beach environment. Data for travel and costs such as food, supplies, accommodation, and equipment was collected. As costs increased, values of WTP were also expected to do the same. If individuals were spending more of their money to use the three public beaches, then it could be expected that they would be willing to give up more of their income to avoid deterioration of the aesthetics of the public beach environment that they have already spent money to use.

An independent variable for substitute public beach areas was incorporated into the demand function. This variable was measured in terms of the total distance in kilometres that a beach user would have

to travel from his or her permanent, year-round place of residence to a public beach area other than the public beach environment in the Lakeland Municipality. As the distance that would have to be travelled to substitute beach areas increased, WTP values were expected to increase. The assumption was made that people would be willing to pay higher values of WTP to avoid travelling greater distances to substitute beach areas because travel costs might increase with the additional kilometres.

A quantity variable--the number of day visits that an individual would make to the public beach environment during the summer season--was also used in this analysis. This explanatory variable was expected to be positively related to the WTP variable. If beach users were increasing their number of visits to this recreation site, then they would be expected to be willing to pay more money to maintain the existing level of aesthetics. If these individuals were spending more time at the beach environment, the assumption was made that they would prefer the area to be aesthetically appealing.

Finally, a taste and preference variable was incorporated into this study. Doing so was one of the main purposes of this research project. This variable was measured as the attitudes of beach users toward the aesthetics of the public beach environment, as these aesthetics existed during the summer of 1989. The adequacy-importance model was used to determine a direct value for this variable of a psychological nature. Attitude measures were expected to be positively related to the WTP variables. As preference for the aesthetics increased, it was assumed

that WTP values would increase.

Additional data was also collected for this study. Such information included:

(1) beach users' gender and education;

(2) whether beach users were year-round residents, cottagers, campers, or day visitors in the Lakeland Municipality during the summer of 1989:

(3) specific beaches of the public beach environment that were visited;

(4) recreational activities participated in while visiting any of the three public beaches; and

(5) number of individuals in households or groups that visited the beaches of the public beach environment.

B. Survey Participants and Sampling

An attempt was made to include different groups of individuals who used the beaches located in the public beach environment in this study's sample of survey participants. Cottagers and permanent residents, along with campers and day visitors have been noted as being users of these recreation sites (SDRD, 1987). Therefore, data was collected for each of these four different groups of individuals so that any possible differences in attitudes toward the public beach setting and the economic valuations of this nonmarket good could be examined. The survey sample was initially divided into subsamples of residents and

nonresidents on the basis of whether or not they resided in the Municipality during any time of the year. These two subsamples were further subdivided. Residents were noted as being either seasonal (i.e., cottagers) or permanent, year-round residents, while nonresidents were described as being either campers or day visitors.

The questionnaires that were used in the contingent valuation survey were distributed to all of the year-round and seasonal residences in the subdivisions of Sunnyside Beach, Sunset Bay, and Neis' South. According to the 1988 mailing directory for the Municipality, approximately 40 residences in these three subdivisions were year-round homes--19 in Sunnyside Beach, 16 in Sunset Bay, and 5 in Neis' South. The remaining residences, numbering approximately 560, were seasonal homes. Due to the low number of year-round residences, the decision was made to distribute a questionnaire to each of these dwellings to ensure that the number of questionnaires returned would be sufficient for statistical analysis. Accordingly, one questionnaire was distributed to each of the seasonal dwellings in the three subdivisions. It was anticipated that the rate of return of questionnaires from seasonal residents would be proportional to that of year-round residents, and the numbers of responses would be reflective of the population of these subdivisions.

Findings of the previously mentioned 1981 survey of beach use in the Lakeland Municipality indicated that at peak times, 52.7 percent of the approximate 475 beach users at Sunnyside Beach were nonresidents (SDRD, 1987). Corresponding data was not available for the Sunset Bay

beach area, while Neis' Beach was noted as not having any users at all. Without complete information about the numbers of resident and nonresident beach users at the three beaches in the public beach environment, a nonresident sample truly proportional to the resident samples could not be determined. Instead, an attempt was made to distribute a number of nonresident questionnaires identical to that of the number of resident questionnaires given out. Based on the previous estimate that approximately 50 percent of the beach users at the Sunnyside Beach public beach area were nonresidents, and because no other appropriate indications of beach use were available for the other two beaches, equal numbers of questionnaires were distributed to residents and nonresidents. Therefore, for the purposes of this study, 50 percent of the beach users in the public beach environment were expected to be residents of the Municipality and the other 50 percent were anticipated to be nonresidents. The numbers of questionnaires that were distributed and returned are presented in Section F of this chapter.

C. The Hypothetical Market and the Vehicle of Payment

Beach users were presented with a hypothetical market in which the condition of the public beach environment was expected to deteriorate. These individuals were informed about the upgrading and maintenance that had taken place to allow this recreation site to be in the condition that it was during the summer of 1989 when this survey was conducted. Then, they were presented with the hypothetical situation in which beach

upgrading and maintenance would not occur in the following five years, and, as a result, the conditions of the Sunnyside, Sunset Bay, and Neis' public beaches were expected to deteriorate. Beach users were asked about the amounts of money that they would be willing to pay to avoid this loss in quality of the condition of the public beach environment. This hypothetical market is presented in question #10 of the resident questionnaire and in question #12 of the nonresident questionnaire (see Appendix II).

Although the nonmarket commodity that was valued in this study was the aesthetics of the public beach environment, it was also referred to as either the attractiveness or condition of this recreation setting. These alternative labels were used to present this nonmarket good in everyday terms to the pilot test and survey participants. The aesthetics of the public beach environment was not portrayed to beach users using the term aesthetics as an attempt to avoid the inclusion of a hypothetical bias when this good was being valued in dollar terms. The possibility of survey participants thinking that the term aesthetics could only be applied to the quality of world famous sites such as national parks and not in a realistic sense to a regional recreation site such as the public beach environment was hoped to be avoided by using the labels of attractiveness and condition.

In the WTP question, beach users were asked to state the maximum amount of money that they would be willing to pay per summer season to avoid a loss in the quality of the aesthetics of the public beach environment. They were asked to make dollar contributions to a special

fund from which monies would only be used to cover the costs of upgrading and maintaining the Sunnyside, Sunset Bay, and Neis' public beach areas. At the time of this survey, nonresidents did not have to pay for using the public beaches in the Lakeland Municipality, but both seasonal and year-round residents had to pay municipal taxes from which a portion was used for beach maintenance and upgrading. This special fund was used as the vehicle of payment to avoid the possibility of causing nonresidents to think that users fees would be charged in the future for the use of the three beaches or allowing residents to believe that they would have to pay additional taxes to maintain the beaches. By not using taxes or user fees as the vehicle of payment, the possibility of the presence of a strategic bias was hopefully reduced. If beach users were asked to value the aesthetics in terms of user fees and taxes, it was felt that a high percentage of responses would be close or equal to zero. It was believed that such values would be given because respondents felt that such amounts would result in user fees not being charged and taxes not being increased.

D. The Pilot Test

The pilot test was conducted to determine those attributes that would be used to develop the multi-attribute scales of the adequacy-importance model. An attempt was made to include attributes that were relevant to the evaluation of the aesthetics of the public beach environment. These attributes were intended to be a reflection of consumers' salient beliefs that these features were the most important

when evaluating this nonmarket good. Twenty-one individuals particpated in the pilot test. These participants included both potential users of public beach areas in Central Saskatchewan and managers of various aspects of the Lakeland Municipality. Potential users included persons living in both Edmonton, Alberta and Prince Albert Saskatchewan. All participants in the pilot test were asked the same two basic questions: (1) "What features do you believe make a public beach area in Central Saskatchewan attractive during the summer months?"; and (2) "What features do you believe make a public beach area in Central Saskatchewan unattractive during the summer months?". Written responses were provided by all individuals. Participants in Edmonton also took part in two group interviews.

The eleven participants who represented potential beach users in Edmonton were graduate students in the Department of Recreation and Leisure Studies at the University of Alberta. These students participated in this pilot study due to the fact that this was an easily accessible group for the researcher to contact and interview. The use of such a group of participants allowed for savings in time and dollar expenses. It was also assumed that many of these individuals may have been familiar with Central Saskatchewan, and, therefore, would have had a general knowledge of the features that would affect the attractiveness of a public beach setting in such a location. Due to the fact that only a few hundred kilometres separates Edmonton and Central Saskatchewan, a number of these participants may have visited or lived in this area in the past. Familiarity with this part of Saskatchewan would help to

provide responses that were realistic.

The Edmonton participants attended one of two group interviews. Five individuals took part in the first interview, while four persons attended the second. (The two remaining participants in Edmonton were only able to provide written responses.) At each group session, participants were first asked to write down their responses. Then, each group as a whole discussed the features that were noted as being important when considering the attractiveness of public beach areas in Central Saskatchewan during the summer months. During each interview, the participants were given ten minutes to write down their answers, while approximately forty-five minutes were spent in the group discussion. Each session was tape-recorded. At the beginning of each group interview, a road map of Saskatchewan was used to show the general location of the central portion of the province. This map was used to help orient participants to the purpose of the interviews.

The pilot test participants from Saskatchewan who represented potential beach users were six residents from the city of Prince Albert. These individuals could not be brought together to participate in a group interview. Instead, each individual was asked to provide his or her own written responses. It was also assumed that these individuals would be familiar with Central Saskatchewan and several of its public beach areas. Therefore, these participants were also expected to be able to provide realistic responses in the pretest.

Four additional participants in Saskatchewan included those persons from both the Prince Albert and Saskatoon areas who dealt with various

management concerns in the Lakeland Municipality. These individuals included: (1) the Reeve of the Lakeland Municipality; (2) a Regional Director of the Saskatchewan Department of Parks, Recreation, and Culture; (3) a senior planner from the Saskatchewan Department of Rural Development; and (4) a tourism planner from the Saskatchewan Department of Economic Development and Tourism. These managers were asked to participate to help account for the differences in perception that may exist between these individuals and the potential beach users. They could not be brought together to take part in a group interview, so they only provided written responses to the pilot test questions.

E. The Survey Questionnaire

Two questionnaires were developed for this contingent valuation survey. A resident questionnaire was created for seasonal and year-round residents and a nonresident questionnaire was developed for day visitors and campers (See Appendix II). Both questionnaires collected the same type of information. All respondents were questioned about whether they were a camper, day visitor, year-round resident or cottager and if they were beach users. Socioeconomic information was also gathered for all survey participants. If respondents were beach users, they were asked questions about their use of the Sunnyside, Sunset Bay, and Neis' public beaches. They were also questioned about their household costs associated with their visits to these public beach areas in question #6 of the resident questionnaire and in questions #7 and #8 in the nonresident questionnaire.

Beach users were also required to answer the WTP question. If these individuals refused to contribute money to the special fund, then, in question #11 of the resident questionnaire and question #13 of the nonresident questionnaire, they were asked to state why they would not do so. Beach users were also asked to state three substitute public beach areas that they would visit if the condition of the public beach environment deteriorated and its three beach were not as appealing to use as they were during the summer of 1989. These substitute areas were listed in questions #9 and #11 of the resident and nonresident questionnaires, respectively.

The adequacy-importance model was incorporated into the contingent valuation survey questionnaire in the form of two questions. The importance of the attributes of the aesthetics of the public beach environment was evaluated using the following question: "When thinking about visiting a public beach area in Central Saskatchewan, how important are the following features when making the decision to visit such a beach area?". Importance was rated in question #7 of the resident questionnaire and in question #9 of the nonresident questionnaire. The evaluation of beach users' beliefs that these aesthetics had the features listed in the multi-attribute scale was carried out by asking: "How satisfactory do you find the following features at the public beach areas at Sunnyside Beach, Sunset Bay, and Neis' Beach?". Beliefs were rated in questions #8 and #10 in the resident and nonresident questionnaires, respectively.

The adequacy-importance model was placed before the willingness-to-

pay question. (A willingness-to-accept question was not asked in this questionnaire. The reason why this question was not included is discussed later in this chapter.) This attitude measurement was placed as such so that respondents could be given the opportunity to consider the features that may possibly affect the attractiveness, or condition, of the three beach areas in the public beach environment before being asked to value the aesthetics of this recreation area.

Both questionnaires were pretested during June 1989. Graduate students in the Department of Recreation and Leisure Studies at the University of Alberta in Edmonton, along with residents and visitors in the Prince Albert and Lakeland areas were asked to participate. The Reeve of the Lakeland Municipality and a Regional Director of the Saskatchewan Department of Parks, Recreation, and Culture were included in this group of individuals. These respondents were able to answer all but one of the questions posed to them. No problems were encountered when completing the attitude scales.

In this pretest, only three of these eleven individuals were able to respond to the willingness-to-accept question with a dollar amount. Although, only one person really showed any understanding of this question that asked how much money his or her household would have to be paid in compensation every summer season if the Sunnyside, Sunset Bay, and Neis' public beaches were allowed to deteriorate from the conditions that they were in during the summer of 1989. Due to the fact that most pretest participants were unable to answer this willingness-to-accept question, the decision was made to exclude it from the final survey

questionnaire. Survey respondents probably would not have provided realistic dollar amounts as answers for a question or situation that they could not truly comprehend. Therefore, by omitting this question, the possibility of the existence of a hypothetical bias would affect the survey results.

F. Distribution of Questionnaires

According to the 1988 Mailing Directory for the Lakeland Municipality, there were approximately 340 residences in the Sunnyside Beach subdivision, 114 in Sunset Bay, and 153 in the Neis' South. One questionnaire was to be distributed to each of these 607 residences. To distribute equal numbers of questionnaires to nonresident beach users at each of the public beaches in these subdivisions, 340 nonresident questionnaires were to be distributed at the Sunnyside Beach public beach area, 114 at Sunset Bay, and 153 at the Neis' public beach. To be able to distribute these numbers of nonresident questionnaires during the six week survey time period, eight questionnaires would have to given out per day at Sunnyside Beach, three at Sunset Bay, and four at Neis' South. In total, 1214 questionnaires were expected to be distributed.

The contingent valuation survey questionnaire was distributed at the Sunnyside, Sunset Bay, and Neis' south public beach areas and subdivisions during the six week period of July 1, 1989 to August 11, 1989, inclusive. This time period allowed beach use to be observed during two long weekends, as well as, during weekdays and regular

weekends. It also allowed beach users, especially nonresidents, who might use the three beaches at different times during the summer to participate in the survey.

Resident questionnaires were distributed throughout the subdivisions of Sunnyside Beach, Sunset Bay, and Neis' South. Only one questionnaire was distributed to each year-round and seasonal residence in these areas.

Questionnaires for nonresidents were presented to individuals in the parking areas of each of the public beach areas at the Sunnyside Beach, Sunset Bay, and Neis' South subdivisions. Individuals were given questionnaires as they arrived in their vehicles at these beach areas. It was assumed that nonresidents would come to these sites in automobiles since they did not live in the immediate areas. (Accordingly, the assumption was made that residents of the Sunnyside Beach, Sunset Bay, and Neis' South subdivisions would walk to these beach areas, since these individuals resided nearby.) When individuals were approached in the parking lots to ask if they would like to participate in this survey, they were also asked if they were a cottager or a year-round resident in the Municipality. This was done to avoid presenting Sunnyside Beach, Sunset Bay, and Neis' South residents with another survey to complete.

A rotating schedule was used to distribute the nonresident questionnaires. For example, on one day the questionnaires were first distributed at the Sunnyside Beach parking lot, then at the Sunset Bay beach area, and, finally, at Neis' Beach. On the following day,

questionnaires initially were given out at Sunset Bay, then at Neis' Beach, and, finally, at Sunnyside Beach. To complete the rotation, on the third day, questionnaires were distributed at Neis' Beach first, then at Sunnyside Beach, and finally, at Sunset Bay. This rotating schedule was repeated throughout the survey time period.

The resident and nonresident questionnaires that were used for this study were accompanied by a cover letter, an instruction sheet, and a self-addressed and postage-paid return envelope (see Appendix II). Only one adult, who was sixteen years of age or older, was required to complete a questionnaire that was distributed to any one household or vehicle. All participants wee asked to return completed questionnaires as soon as possible.

A total of 601 questionnaires were distributed during the survey time period. Five hundred twenty-five questionnaires were distributed to seasonal and year-round residences: 89 in the Sunset Bay subdivision, 101 in Neis' South, 334 in Sunnyside Beach, and 1 to a Murray Point resident who was visiting the Sunnyside public beach area. Seventy-six nonresident questionnaires were given out.

Although approximately 1200 questionnaires were suppose to have been given out, various obstacles prevented the distribution of such a number. With respect to the resident questionnaires, several residences lacked any secure or protected place in which to leave questionnaires when occupants were not at home. Questionnaires were not left at these residences because they would probably have been damaged by rain and, more than likely, blown away to litter the Sunnyside, Sunset Bay, and

Neis' South subdivisions. Also, many residences could not be located. Given the fact that the number of residences at which questionnaires were to be distributed was taken from a mailing directory from the previous year may have caused part of this problem. For example, this 1988 directory indicated that a total of twenty-one trailer lots were used by different parties in the Sunset Bay subdivision, but only seventeen trailers were located. There may also have been the possibility that more than one owner was listed for various residences. This may have been the case for those residences where more than one family member owned and maintained such a dwelling. Finally, problems in locating several residences in the forested areas of the backshore portions of the three subdivisions probably contributed to the fact that fewer resident questionnaires were distributed than anticipated. The researcher's lack of familiarity with this area may have caused this problem.

Obstacles were also encountered in the distribution of the nonresident questionnaires. Due to certain reasons, nonresidents seemed to have been missed when they arrived in the parking facilities of the Sunnyside, Sunset Bay, and Neis' public beach areas. Survey questionnaires were to be given to nonresidents when they arrived in the parking areas. Again, the researcher's lack of familiarity with both the Lakeland area and the recreational use of its resources probably contributed to the occurrence of this first obstacle. Nonresident beach users were anticipated to arrive at the three public beach areas between the times of nine and twelve o'clock in the morning. Instead, these

individuals tended to arrive between the hours of 11:00 A.M. and 2 P.M. Therefore, until the researcher became more familiar with the arrival times of nonresidents, and the survey distribution schedule was altered to the later times, many nonresidents were being missed as they arrived at the three beach areas. Nonresidents were also not being met in the parking ares because the researcher was only able to be in one location at a time. Many times the researcher could not be in the parking areas when the beach users were arriving.

By October 1989, 132 questionnaires had been returned. Nonresidents had completed 14 of these questionnaires, while the remaining 118 had been received from Lakeland residents. One resident questionnaire and three nonresident questionnaires were not usable. As a result, 128 questionnaires--117 resident and 11 nonresident--were used in the data analysis. The numbers of questionnaires distributed and returned are summarized in Table III-1.

TABLE III-1

NUMBER OF QUESTIONNAIRES DISTRIBUTED AND RETURNED

	Resident Questionnaires	Nonresident Questionnaires	Totals
Proposed Number of Questionnaires For Sampling Purposes	607	607	1214
Actual Number of Questionnaires Distributed	525	76	601
Percentage of Questionnaires Distributed	86.49%	12.52%	49.51%
Number of Questionnaires Returned	118	14	132
Percentage of Questionnaires Returned	22.48%	18.42%	21.96%
Number of Usable Questionnaires	117	11	128

All but one of the 117 resident questionnaires used in the data analysis were received from the occupants of seasonal and year-round residences located in all three subdivisions of the public beach environment. Seventy-seven such questionnaires were received from

Sunnyside Beach, 22 from Sunset Bay, and 17 from Neis' South. One resident questionnaire was also completed and returned by a cottager from the Murray Point subdivision. Table III-2 summarizes the numbers of resident questionnaires that were distributed and the number of these questionnaires that were usable for data analysis.

TABLE III-2

RESIDENT QUESTIONNAIRES DISTRIBUTED AND RECEIVED BY SUBDIVISIONS

Subdivision	Number of Questionnaires Distributed	Number of Questionnaires Usable For Data Analysis	Usable Questionnaires as Percentage of Number Distributed
Sunnyside Beach	334	77	23.05%
Sunset Bay	89	22	24.72%
Neis' South	101	17	16.83%
Murray Point	1	1	100.00%
	525	117	22.29%

Eleven of the resident questionnaires were completed by year-round residents. The other 106 such questionnaires were received from cottagers. The eleven nonresident questionnaires were completed by individuals who, at the time when they received these questionnaires, consisted of nine day visitors, one camper, and one individual who was staying at a resident's cottage. Eight of the nonresident questionnaires used in the data analysis were distributed in the parking lot at the Sunnyside public beach area, two were given out at the Sunset Bay parking area, and one was distributed in the Neis' Beach parking facility.

This chapter presented the research methodology and data collection methods that were used for this study. The data that was collected for the pilot test was analyzed using content analysis, while multiple regression, chi-square, and content analyses were used to examine the data gathered in the contingent valuation survey. The findings of these analyses are presented in the following chapter.

Chapter 4: Results of the Data Analysis

This chapter first presents the results of the pilot test and then the findings of the contingent valuation survey. These results were used to determine if the data collected had assisted in the achievement of the two purposes of this research project. The first of these purposes was to estimate the economic value of the aesthetics of the public beach environment. The second purpose involved incorporating a psychological measure into this contingent valuation study in order to determine a noneconomic value of this intangible commodity and also to increase understanding of consumers' preferences for such a good.

A. Results of the Pilot Test

The pilot test was conducted to determine the attributes that should be included in the adequacy-importance model. This model, in turn, was used in the contingent valuation survey instrument to measure beach users' attitudes toward the aesthetics of the public beach environment. The results of the pilot test indicated that those attributes, or features, respondents considered to be the most important when evaluating the attractiveness of public beach areas in Central Saskatchewan are those listed in Table IV-1. These ten attributes were determined from the written responses provided by the pilot test participants. Content analysis was used to analyze these responses. The ten most frequently noted attributes were used to construct the multi-attribute scales of the adequacy-importance model. These features

were used to represent respondents' salient beliefs that the attractiveness of the type of beach area in question consisted of these attributes.

TABLE IV-1

Attributes Considered Most Important
By All Pilot Test Participants
When Assessing the Attractiveness of
Public Beach Areas in Central Saskatchewan

Attributes	Number of Responses
Absence of litter and garbage	32
Availability of picnic areas and facilities	19
Number of beach users	19
Separation of boating and swimming areas	19
Cleanliness and quality of lake water	18
Noise levels	17
Availability of washroom, shower, and change house facilities	17
Presence of trees	14
Access to areas where beaches are located	13
Cleanliness of washroom, shower, and change house facilities	13

When the Edmonton participants in the pilot test took part in the group interviews, not one of these individuals noted any attribute that was different from those provided in the individual written responses. On the other hand, when the written responses provided by potential users and managers of various concerns in the Lakeland Municipality were compared, it was found that the attributes noted by these two different groups varied somewhat. Table IV-2 is a list of those features that

were most frequently noted by the managers, while Table IV-3 presents the features considered most important by potential users.

TABLE IV-2

Attributes Considered Most Important
By Managers
When Assessing the Attractiveness of
Public Beach Areas in Central Saskatchewan

Attributes	Number of Responses
Access to areas where beaches are located	9
Absence of litter and garbage	9
Separation of boating and swimming areas	7
Cleanliness and quality	6
Availability of picnic areas and facilities	5
Location of parking lots	5
Number of beach users	4
Sheltered beach area	4
Availability of boating facilities	3
Availability of concessions	3
Clean sand	3
Cleanliness of washroom, shower, and change house facilities	3
Enforcement of bylaws	3
Presence of trees	3

TABLE IV-3

Attributes Considered Most Important
By Potential Users
When Assessing the Attractiveness of
Public Beach Areas in Central Saskatchewan

Attributes	Number of Responses
Absence of litter and garbage	23
Noise levels	17
Availability of washroom, shower, and change house facilities	16
Number of beach users	15
Availability of picnic areas and facilities	14
Cleanliness and quality of lake water	12
Separation of boating and swimming areas	12
Sandy beach	12
Presence of trees	11
Cleanliness of washroom, shower, and change house facilities	10

Attributes noted by both managers and potential users included: absence of litter and garbage; separation of boating and swimming areas; cleanliness and quality of lake water; availability of picnic areas and facilities; number of beach users; cleanliness of washroom, shower, and change house facilities; and presence of trees. Additional attributes rated very important by managers were: access to areas where beaches are located; location of parking lots; sheltered beach areas; availability of boating facilities; availability of concessions; clean sand; and enforcement of bylaws. Only potential users considered the following attributes to be most important: noise levels; availability of washroom, shower, and change house facilities; and a sandy beach.

Comparisons were also made between the ten attributes that were used to develop the adequacy-importance model and the features of other beach and coastal areas investigated in previous research. (This research was discussed earlier in Chapter 2. A list of the attributes and attribute categories used in these studies is presented in Table II-1.) Caution must be expressed when making comparisons between these features. For example, the previous research examined shoreline use or preference in different geographical locations, and not one of these locations was in Central Saskatchewan. Each shoreline area may have distinct features due to its geographical location (e.g., sand dunes in coastal areas), and, therefore, obvious differences in features between the various study locations should be expected. Comparisons should also be made cautiously due to the fact that the groupings of attributes may, to a certain extent, reflect the subjective decisions made by the researchers.

Despite these limitations, certain attributes in Table IV-1 bear similarity to many of the characteristics listed in Table II-1. For example, natural features (Nassauer, 1983; and Nasar, 1987), foliage (Peterson and Neumann, 1969), degree of crowding (Peterson and Neumann, 1969), and accessibility (Hecock, 1970) were attributes included in previous studies, while presence of trees, number of people, and access to areas where beaches are located were noted as being important in the pilot test. Hecock (1970) used facility development as a characteristic of Cape Cod beaches in his study. Attributes that were related to facility development in the results of the pilot test included

availability of picnic areas and facilities and the availability and cleanliness of washroom, shower, and change house facilities. Nassauer (1983) pointed out that tidiness was "the most important ephemeral characteristic for predicting preference" (p.214) of the coastal landscape of an island in the Louisiana Gulf Coast area. This feature dealt with landscape maintenance and the disposal of litter and debris. The results of the pilot test indicated that the attribute labelled as the absence of litter and garbage was the most frequently noted feature when respondents were evaluating the attractiveness of public beaches in Central Saskatchewan.

Other attributes that were used in the previous research were also found to be somewhat similar to various features noted by pilot test participants. These latter features were those that were not stated in a sufficient number of cases to be included among the ten most frequently noted features (see Appendix III). For example, Peterson and Neumann (1987) included sand cleanliness and water safety measures such as lifeguards in their study, while clean sand and lifeguards on duty were two other attributes determined in the pilot test. In addition, Nasar (1987) had used residential, recreational/boating, and activities as categories of features in his research. Similarly, the results of the pilot test included such attributes as cottage accommodation, location of commercial and residential buildings relative to beaches, programming of activities, play facilities for children, and availability of recreation activities that are not beach oriented.

B. Results of the Contingent Valuation Survey

This section presents descriptive information about beach users and their use of the Sunnyside, Sunset Bay, and Neis' public beach areas. In addition, the psychological measures that were determined for the aesthetics of the public beach environment through the use of the adequacy-importance model are also discussed. Finally, the results of the multiple regression and chi-square nonparametric analyses are presented, along with total dollar values for the economic benefits of the aesthetics of the public beach environment.

The results presented in this section are only for resident beach users. Due to the small sample size of nonresidents (i.e., a sample size of 11), the results of the data analysis for this group of individuals are questionable. Consequently, these findings have been excluded from the main discussion of this research project and are presented in Appendix IV.

(i) Beach Users

The purpose of this section is to examine various descriptive information about the beach users. Although these findings are not directly related to the achievement of the purposes of this study, they do provide additional background information that can enhance the understanding of the beach users of the Sunnyside, Sunset Bay, and Neis' public beach areas. Findings in this section present the following information: (1) subdivisions of residence; (2) descriptions of the average beach user in terms of socioeconomic factors, number of day

visits made to the public beach environment, and number of individuals per household or party; (3) beaches visited; (4) average numbers of beach users per day; and (5) recreational activities in which users participated.

Subdivisions of Residence

Only 101 of the 128 survey participants were users of the Sunnyside, Sunset Bay, and Neis' public beach areas. Ninety of the resident questionnaires had been completed by beach users. These individuals consisted of 6 year-round residents and 84 cottagers. The subdivisions in which these residents resided are presented in Table IV-4.

TABLE IV-4

Subdivisions of Residence For
Seasonal and Year-round Resident Beach Users

	Sunnyside Beach	Sunset Bay	Neis' South	Other Sub-Divisions	Total
Year-round Resident Beach Users	4	2	0	0	6
Seasonal Resident Beach Users	61	14	8	1	84
TOTALS	65	16	8	1	90

The Average Beach User

When year-round and seasonal resident beach users were grouped together, the ages of these individuals were found to range from 20 to 94 years. Their average age was 52.7 years. Thirty-one of these respondents were female, 54 were male, and 5 did not indicate their gender. Forty-eight of these individuals were employed at the time of the survey, 37 were not, and 5 did not indicate their employment status. Of the 48 resident beach users who noted that they were employed, 39 individuals worked full-time, 6 worked part-time, 2 worked seasonally, and the remaining individual did not state this nature of his or her employment. Average annual before tax household income for this overall group of resident beach users fell in the category of $45,001 to $50,000. The average number of individuals per household was four for this group of survey participants. These individuals made an average of 36 day visits to the three public beaches during the summer (where one day visit equalled four hours), and incurred an average total cost of $816.00 per household for those expenses associated with beach use. Six resident beach users noted that estimating costs for beach use was not an easy task to do and, therefore, did not provide any estimates.

The six beach users who were year-round residents in the Lakeland Municipality ranged in age from 33 to 64 years. The average age was 52.6 years. Four of these individuals were male, one was female, and the remaining person did not indicate his or her gender. At the time of this survey, three of these individuals were employed, while the other three did not work. Two of the three individuals who were employed

worked on a full-time basis. The other employed individual did not state whether he or she worked full-time, part-time, or seasonally. The average annual before tax household income for these respondents was between $50,001 and $55,000. Four was the average number of people per household. The average number of day visits made to the beaches of the public beach environment during the summer months by these six year-round resident beach users was 41. Thirty dollars per household was the average total cost associated with beach use.

Beach users who were seasonal residents ranged in age from 20 to 94 years. The mean age was 52.7 years. Thirty of these respondents were female, 50 were male, and 4 persons did not state their genders on the questionnaires. At the time of the survey, 45 of these individuals were employed, 34 were not and 5 did not state whether on they were working. Thirty-seven of the 45 people who said that they were employed worked on a full-time basis, while 6 of these individuals worked part-time, and remaining 2 were employed at seasonal jobs. The mean annual household income, before taxes, fell between $40,001 and $45,000.

These seasonal resident beach users made an average of 35 day visits to the three public beaches. Their average total costs associated with this beach use was $837.85 per household. Six seasonal residents did not provide any costs for beach use because they felt that such costs were impossible to estimate. The average number of people per household was four. Thirty-five of these individuals lived in Prince Albert, Saskatchewan, while another 29 persons lived on a year-round basis in Saskatoon, Saskatchewan, which is located 188 kilometres

from the public beach environment. The average distance travelled by cottagers from their place of year-round residence to the study area was 179 kilometres. The shortest distance travelled was 23 kilometres from Paddockwood, Saskatchewan, while the longest distance travelled was 1941 from Victoria, British Columbia.

Beaches Visited

Beach users were questioned about which beaches they would visit in the public beach environment (see Table IV-5). All three of the beach areas--Sunnyside Beach, Sunset Bay, and Neis' Beach--in the public beach environment were noted as being beaches that would be used by these individuals. Questionnaire responses indicated that Sunnyside Beach would be the beach visited by the greatest number of these survey participants. Six (100%) of the year-round residents and 78 (93%) of the cottagers indicated that they would use this beach. The public beach area at Sunset Bay would be used by 4 (67%) of the year-round residents and 35 (42%) of the seasonal residents. Beach users indicated that they would use the public beach area at Neis' South the least. One (17%) of the year-round residents and 20 (24%) of the cottagers would use this beach during the summer season. Eighteen of the resident beach users (all of whom were seasonal residents) noted that they would also use the beaches located at their own lakeshore properties.

TABLE IV-5

Beaches Visited By Resident Beach Users

Beaches	Number of Beach Users: Year-round Residents	Seasonal Residents	Year-round and Seasonal Residents
Sunnyside Beach Only	2	34	36
Sunset Bay Only	1	5	6
Neis' Beach Only	0	0	0
Sunnyside Beach and Sunset Bay	2	11	13
Sunnyside Beach and Neis' Beach	0	2	2
Sunset Bay and Neis' Beach	0	1	1
All Three Beaches	1	13	14
Sunnyside Beach and Own Cottage Beach	0	12	12
Sunset Bay and Own Cottage Beach	0	0	0
Neis' Beach and Own Cottage Beach	0	0	0
Sunnyside Beach, Sunset Bay, and Own Beach	0	2	2
Sunnyside Beach, Neis' Beach, and Own Beach	0	1	1
Sunset Bay, Neis' Beach, and Own Beach	0	0	0
All Three Beaches and Own Beach	0	3	3
TOTALS	6	84	90

Average Numbers of Beach Users Per Day

The average numbers of resident beach users per day were calculated for the Sunnyside, Sunset Bay, and Neis' public beach areas. These figures are presented in Table IV-6.

TABLE IV-6

Average Numbers of Resident Beach Users Per Day

	Sunnyside Beach	Sunset Bay	Neis' Beach	All Three Beaches
Residents	75	25	16	116

Activities

Those beach users who took part in the survey participated in a variety of activities at the Sunnyside, Sunset Bay, and Neis' public beach areas. Twenty-eight such activities were noted by resident beach users (see Table IV-7). Year-round residents participated in 9 of the 28 activities, while seasonal residents took part in all of these pursuits. Swimming, sunbathing, and walking were those activities that seemed to be participated in by the majority of the resident beach users. All 6 of the year-round residents and 75 of the seasonal residents swam at the three beaches. In total, 90 percent of the resident beach users participated in swimming activities. Eighty-three

percent of these beach users also participated in sunbathing. These individuals included 5 of the year-round residents and 70 of the cottagers. Walking was also participated in by 87 percent of these beach users. Five year-round residents and 73 seasonal residents took part in this activity. Several activities related to boating were noted by respondents as being activities in which they also participated. These activities included motorboating, waterskiing, kneeboarding, tubing, canoeing, kayaking, and sailboating.

TABLE IV-7

Recreational Activities
Participated In By Resident Beach Users

Activities	Number of Beach Users		
	Year-round Residents	Seasonal Residents	Year-round and Seasonal Residents
Swimming	6	75	81
Sunbathing	5	70	75
Walking	5	73	78
Motorboating	4	43	47
Picnicking	3	16	19
Waterskiing	2	28	30
Canoeing	2	21	23
Fishing	1	6	7
Windsurfing	1	5	6
Kneeboarding	0	2	2
Playground	0	3	3
Cycling	0	2	2
Swim Lessons	0	2	2
Golfing	0	2	2
Mini Golf	0	2	2
Sandcastle Making	0	2	2
Sailboating	0	1	1
Horseback Riding	0	1	1
Kayaking	0	1	1
Painting Buildings	0	1	1
Tubing	0	1	1
Visiting	0	1	1
Volleyball	0	1	1
Girl Watching	0	1	1
Gardening	0	1	1
Trampoline	0	1	1
Birdwatching	0	1	1
Reading On Beach	0	1	1

(ii) Psychological Measures

The findings of the adequacy-importance model were utilized to examine beach users' attitudes toward the aesthetics of the public beach environment. Resident beach users' evaluations of the attributes of this nonmarket commodity and of the aesthetics as a whole were examined.

The mean values of the importance and satisfaction evaluations of the attributes included in the adequacy-importance model are presented in the following tables. Those mean values that reflect survey participants' feelings about how important these attributes were when making decisions to visit particular beaches in Central Saskatchewan are presented in Table IV-8. These values were derived from the responses to question #7 in the resident questionnaire. Table IV-9 lists the mean values that represent beach users' beliefs that the Sunnyside, Sunset Bay, and Neis' public beaches had the attributes presented in the adequacy-importance model. These values were determined from the responses to questions #8 in the resident questionnaire.

TABLE IV-8

Mean Values of Importance Evaluations of Attributes
(Resident Beach Users)

	Beach Users		
Attributes	Year-round Residents (N=6)	Seasonal Residents (N=84)	Year-round and Seasonal Residents (N=90)
Cleanliness and Quality of Lake Water	7 (1)*	6 (0)	6 (1)
Availability of Washroom, Shower, and Change House Facilities	7 (1)	5 (1)	5 (2)
Cleanliness of Washroom, Shower, and Change House Facilities	7 (1)	6 (3)	6 (4)
Noise Levels	5 (1)	5 (1)	5 (2)
Access To Areas Where Beaches Are Located	7 (1)	5 (2)	5 (3)
Presence of Trees	6 (1)	6 (3)	6 (4)
Absence of Litter and Garbage	7 (1)	6 (0)	6 (1)
Number of People At The Beach	5 (1)	5 (1)	5 (2)
Separation of Boating And Swimming Areas	7 (1)	6 (1)	6 (2)
Availability of Picnic Areas And Facilities	6 (1)	5 (4)	5 (5)
AVERAGE	6	6	6

N=sample size
*=number of missing cases

1=extremely unimportant
2=quite unimportant
3=slightly unimportant
4=neither unimportant nor important
5=slightly important
6=quite important
7=extremely important

TABLE IV-9

Mean Values of Satisfaction Evaluations of Attributes
(Resident Beach Users)

Attributes	Beach Users: Year-round Residents (N=6)	Beach Users: Seasonal Residents (N=84)	Year-round and Seasonal Residents (N=90)
Cleanliness and Quality of Lake Water	6 (2)*	5 (5)	5 (7)
Availability of Washroom, Shower, and Change House Facilities	3 (2)	3 (10)	3 (12)
Cleanliness of Washroom, Shower, and Change House Facilities	3 (2)	3 (16)	3 (18)
Noise Levels	4 (2)	4 (8)	4 (10)
Access To Areas Where Beaches Are Located	3 (2)	5 (6)	5 (8)
Presence of Trees	6 (2)	5 (4)	5 (6)
Absence of Litter and Garbage	4 (2)	5 (3)	5 (5)
Number of People At The Beach	5 (2)	5 (4)	5 (6)
Separation of Boating And Swimming Areas	6 (2)	5 (3)	5 (5)
Availability of Picnic Areas and Facilities	4 (2)	4 (5)	4 (7)
AVERAGE	4	5	4

N=sample size
*=number of missing cases

1=extremely unsatisfactory
2=quite unsatisfactory
3=slightly unsatisfactory
4=neither unsatisfactory nor satisfactory
5=slightly satisfactory
6=quite satisfactory
7=extremely satisfactory

All of the attributes included in the adequacy-importance model were rated by the resident beach users as being important when making the decision to visit a public beach area in Central Saskatchewan. The attributes of cleanliness and quality of the lake water, the absence of litter and garbage, the cleanliness of the washroom, shower, and change house facilities, and the separation of boating and swimming areas were rated by year-round residents as extremely important, while seasonal residents and the overall group of residents evaluated these four attributes as quite important. Two attributes--the access to the areas where the beaches are located and the availability of washroom, shower, and change house facilities--were evaluated as extremely important by year-round residents and as slightly important by seasonal residents and the entire group of residents. The presence of trees was rated as quite important by all resident beach users, while these same individuals rated both the number of people at the beaches and noise levels as slightly important. Finally, the availability of picnic areas and facilities was assessed as being quite important by year-round residents and as slightly important by seasonal residents and the overall group of residents.

The mean values for the satisfaction evaluations generally tended to be lower than those of importance for most of the attributes. Residents beach users seemed to be most satisfied with three attributes: the cleanliness and quality of the lake water; the presence of trees; and the separation of boating and swimming areas. Year-round residents were quite satisfied with these three attributes, while seasonal

residents and the entire group of residents were slightly satisfied. The attribute labelled as the number of people at the beaches was evaluated as being slightly satisfactory by all groups of residents. Absence of litter and garbage was rated by seasonal residents and the overall group of residents as being slightly satisfactory. Year-round residents found this attribute neither satisfactory nor unsatisfactory. Both noise levels and the availability of picnic areas and facilities were evaluated as neither satisfactory nor unsatisfactory by all residents. Year-round residents rated the attribute of access to the areas where beaches are located as slightly unsatisfactory, while seasonal residents and the entire group of residents rated this feature as slightly satisfactory. Year-round and seasonal residents assessed both the availability and cleanliness of the washroom, shower, and change house facilities as slightly unsatisfactory.

From an overall perspective, resident beach users felt that the attributes included in the adequacy-importance model were quite important when making the decision to visit a particular public beach area in Central Saskatchewan. On the other hand, the overall ratings of satisfaction for the various attributes of the aesthetics of the public beach environment were rated differently. As a group, year-round and seasonal resident beach users evaluated the attributes of the public beach environment with a neutral rating. These respondents were neither satisfied nor unsatisfied with all of the beach area features. As a group on their own, the year-round residents were also neutral in their evaluation, while the cottagers were slightly satisfied with the

attributes.

The values of the attitudes toward the aesthetics of the public beach environment were determined using the following equation:

$$A_b = \sum_{i=1}^{N} W_i B_{ib}$$

The mean value of attitude was 267 for resident beach users. This value was 270 for year-round residents and 266 for cottagers. The lowest possible value that could be attained would be 10 if an individual rated each attribute in the adequacy-importance model as extremely unimportant or extremely unsatisfactory. On the other hand, if each variable was rated as extremely important or extremely satisfactory, then the highest possible value of attitude would be 490. As this value increases, an individual's attitude toward the aesthetics becomes more positive.

(iii) Multiple Regression Analysis

Multiple regression analysis was used to examine the relationships between the variables of the demand function for the aesthetics of the public beach environment. WTP was used as the dependent variable in the following regression equation:

$$WTP = B_0 + B_1Y + B_2C + B_3S + B_4N + B_5A + B_6R + U$$

where,

β_o = a constant;

Y = annual before tax household income;

C = total household costs associated with the use of the Sunnyside, Sunset Bay, and Neis' public beach areas;

S = distance from place of permanent place of residence to a substitute public beach area;

N = number of day visits that an individual made to the three public beaches during the summer season;

A = beach user's attitude towards the aesthetics of the public beach environment;

R = variables of age, (D), whether or not employed, (E), and distance in kilometres from place of permanent residence to the public beach environment, (K); and

U = an error term.

Regression analysis was used to examine the demand functions of the resident beach users. This analysis was not carried out separately for the subsamples of year-round and seasonal resident beach users due to the fact that the sample size of the year-round residents was very small (i.e., six participants).

Different regression analyses were conducted for the WTP demand function. The independent variables of income, costs, distance to substitute beach areas, and number of day visits were included in each

equation, while the socioeconomic variables of employment and age, and the variable of distance from place of permanent residence were used one at a time. The attitude variable was used in an equation when one of the latter three variables was included in the analysis. Each of the equations that included one of these variables was analyzed with and without the attitude variable.

All regression analyses conducted for resident beach users were not significant at the five percent significance level. Very few variables were significant when separate t-statistics were examined. For example, the computed t-statistic for the attitude variable was less than the critical t-value in all cases. The income variable was found to be significant in the equations that included the attitude variable. In all of these equations, income was positively related to the dependent variable. Costs were significant and positively related to WTP in the equation that included both the age and attitude variables and also in the equation that incorporated the employment and attitude variables. The only other variables found to be significant were the substitute and number of visit variables in particular equations. The substitute variable was found to be significant when employment, place of residence, and age (but not attitude) were included in the analyses. The number of visits variable was found to be significant when the employment and age variables were used separately (without attitude) in two different equations. The substitute beach area variable was both significant and positively related to WTP in both of these equations.

The results of the regression analyses should be interpreted with

caution. The high incidence of missing values in the data caused very low numbers of cases to be included in all of the regressions. For example, the number of cases in any of the regression equations for the residents ranged from 21 to 32. Due to the lack of significance of both the regression equations and the attitude variable, multiple regression analysis was carried out for another means that can be used to determine the economic value of nonmarket goods.

Although this study was not designed to gather data for the travel cost method, which is a technique that can be used to estimate the economic values of various nonmarket commodities indirectly from travel costs, multiple regression analysis was carried out for this approach. This second set of regressions was conducted to examine if the attitude variable would be significant in a different analysis. These results should be interpreted cautiously. Because this study was not designed to collect data for this method, certain requirements of this approach were not met. A time variable was not included in the analysis and the quantity variable for which data was collected in this study was not appropriate for the purposes of the travel cost method.

"The basic premise of the [travel cost] approach is that the number of trips to a recreation site will decrease as the direct out-of-pocket and time costs of travel increase, other things remaining equal" (Walsh, 1986, p.217). Although data for those travel costs associated with beach use was collected, data for the opportunity cost of time spent travelling was not gathered. The absence of this variable may cause an underestimation of the value of consumer surplus and, in turn, the

valuation of the nonmarket good in question (Walsh, 1987).

The assumption is also made for the travel cost method that a person will make more than one trip to a recreation site. This assumption is made so that the dependent variable, which is the quantity variable measured in terms of the number of trips made from an individual's year-round residence to the recreation site, has sufficient variation for statistical purposes (Walsh, 1986). In this study, the quantity variable was measured in terms of the number of day visits made to the public beach environment. This variable was not measured in the terms that meet the above requirement of the travel cost method. It did not account for the number of trips that a person would make to the public beach environment by travelling from his or her permanent place of residence. Instead, this variable was derived from the amount of time that an individual would spend at the Sunnyside, Sunset Bay, and Neis' public beach areas. (One day visit was equal to four hours spent at the public beach environment.) Even though resident beach users may have made very few trips to get to the Lakeland area from their permanent residences, they may have spent many hours at the public beach environment. A year-round resident would never have to travel to use this recreation site and a cottager may only make one trip per summer season to the Lakeland Municipality.

Multiple regression analysis was carried out for various demand functions when the travel cost approach was taken into consideration. The dependent variable that was used in this analysis was the number of day visits made to the public beach environment. Independent variables

included travel costs, income, distance to substitute beach areas, attitude, employment, age, and distance from place of permanent residence. The first four independent variables were included in all of the regression analyses, while the attitude, employment, age, and residency variables were included in the same fashion as in those equations where WTP was the dependent variable.

The following equation is the general regression equation that was used in this analysis:

$$\text{Number of day visits} = B_0 + B_1TC + B_2Y + B_3S + B_4A + B_5R + U$$

where,

B_o = a constant;

TC = travel costs per household;

Y = annual before tax household income;

S = distance in kilometres from place of permanent place of residence to a substitute public beach area;

A = beach user's attitude towards the aesthetics of the public beach environment;

R = variables of age, (D), whether or not employed, (E), and distance in kilometres from place of permanent residence to public beach environment, (K); and

U = an error term.

Not any of the regression equations that were determined for the resident beach users were found to be significant at the five percent significance level. Again, these results should be interpreted with caution. The number of cases that were included in each equation was very low, ranging from 19 to 30. As a result, approximately only one third of the 117 possible questionnaires were used in the analysis.

(iv) Willingness-to-pay Values

Mean values were calculated for the WTP amounts elicited from resident beach users. The mean WTP value per summer season for one household was $16.69 for these beach users. The average amount that cottagers were willing to pay was $17.94 per household, while the mean value for year-round residents was zero. All members of this latter group of individuals were not willing to contribute to the hypothetical special fund. WTP values for cottagers ranged from zero to $275.00. Sixty-four of these individuals were not willing to make any contributions to the special fund.

Question #11 of the resident questionnaire was used by beach users to explain why they would not contribute money to the special fund. The responses to this question were examined using content analysis to group together similar comments. Then, the chi-square test for goodness of fit was used to examine the frequencies of the reasons noted by the resident beach users (see Appendix III). At the 5 percent level of significance, the computed chi-square statistic was found to be

significant for residents. The most often cited reason for not contributing was the fact that these beach users already pay taxes. Seventy-five percent of the resident beach users who responded with zero dollar amounts to the willingness-to-pay question indicated that this was the reason why they would not contribute money to the special fund. All six of the year-round residents provided zero values for WTP because they also felt that they were already paying too much money in taxes.

The dollar value of the aesthetics of the public beach environment was estimated using WTP values elicited from resident beach users in the contingent valuation survey. Such a value was also estimated using travel costs as an indirect measure of willingness-to-pay. Table IV-10 presents these values in terms of a total value per summer season. It also presents these amounts in terms of values per day visit and per day. The calculations of these dollar amounts are presented in Appendix III.

TABLE IV-10

Economic Value
of the
Aesthetics of the Public Beach Environment*

	Total Value Per Summer Season	Value Per Day Visit	Value Per Day
CONTINGENT VALUATION	$7,794.23	$ 7.55	$ 72.17
TRAVEL COST METHOD	$71,282.88	$69.07	$660.03

*These economic values have been determined using only those WTP values and travel costs elicited from resident beach users who participated in the survey.

The conclusions and implications that can be made from the results of the data analysis for this research project are presented in the following chapter. This discussion will focus upon various theoretical aspects of including a psychological measure in a contingent valuation study. It will also focus upon the implications that these findings may have for the management of the public beach environment.

Chapter 5: Conclusions and Implications

This chapter discusses the conclusions and implications that can be drawn from the results of the data analysis. The points presented are discussed in terms of the study's purposes and the reasons stated for the significance of such a research project.

The purpose of this study was twofold. First, by taking into account only user values, the contingent valuation method was used to estimate the economic value of the nonmarket good referred to as the aesthetics of the public beach environment. Then, to assist in estimating a dollar amount that realistically reflected beach users' preferences for this commodity, a psychological measure was incorporated into the design of the study. Beach users' attitudes toward the aesthetics of the public beach environment were measured to explore the relationship between the economic and noneconomic valuations of this intangible public commodity. The significance of this study was noted as being the fact that it may enhance the understanding of how economic and psychological theory could both be used to form a theoretical framework when including a noneconomic measure in a contingent valuation survey. This research project was also noted as being important because its results may have implications for various management and development concerns in the Lakeland Municipality.

The aesthetics of the public beach environment was treated as a nonmarket commodity that was composed of different attributes. A psychological scale--an adequacy-importance model--was incorporated into

the contingent valuation survey questionnaires to determine preference for, or attitude towards, these attributes. In turn, the value that was estimated for this attitude measure was used as a direct value of a taste and preference variable in demand functions as a means to explore why people valued the aesthetics as they did in dollar terms.

A pilot test was conducted to determine consumers' salient beliefs about which attributes were important when assessing the value of the aesthetics of the public beach environment. The results of the pilot test indicated that the following attributes were considered important: (1) absence of litter and garbage; (2) availability of picnic areas and facilities; (3) number of beach users; (4) separation of boating and swimming areas; (5) cleanliness and quality of lake water; (6) noise levels; (7) availability of washroom, shower, and change house facilities; (8) presence of trees; (9) access to areas where beaches are located; and (10) cleanliness of washroom, shower, and change house facilities. These attributes were used to construct the adequacy-importance model.

The findings of this research project included both economic and psychological values of the nonmarket commodity referred to as the aesthetics of the public beach environment. However, the results of the multiple regression analysis indicated that the attitude variable was not significant in any of the regression equations derived for resident beach users when WTP was used as the dependent variable. This taste and preference variable also was not significant when regression analysis was conducted for the travel cost method when the dependent variable was

the number of day visits made to the public beach environment.

Due to the fact that the attitude variable was not significant in any of the regression equations in which WTP was the dependent variable, a certain conclusion could be made. With respect to this study, this result implies that the psychological measure of attitude did not help to explain why beach users were willing to pay certain amounts of money to avoid a loss in the quality of the aesthetics of the public beach environment. Therefore, this particular measure of the taste and preference variable could not be used to explain these consumers' intended behaviour to contribute certain portions of their income to the special fund. The determination of beach users' preference for the attributes of the aesthetics of the public beach environment did not assist in understanding their demand for this environmental commodity.

Perhaps, the lack of significance of the attitude variable (and the lack of significance of any of the regression equations) may have been due to problems with data collection. Questionnaires were used in this study to collect data. Many of the returned questionnaires were incomplete because several respondents did not provide answers to all of the questions. As a result, there was a high incidence of missing values in the data file. This factor probably caused the low number of cases that were included in the regression analysis. The number of cases ranged from the low twenties to the low thirties in the various regressions, even though the total number of resident questionnaires that had been returned was 90. Possibly, interviews should have been carried out to ensure that responses were provided for all of the

questions and that the number of missing values was minimized.

Although the results of this contingent valuation study did not indicate that an individual's attitude towards a nonmarket good may influence the amount of money that he or she would be willing to pay for that good, these findings did provide other valuable and usable information. These results may have practical implications for the Rural Municipality of Lakeland for the management of the public beach environment and other public beaches in the area. These findings may assist in the achievement of certain aspects of the Municipality's five planning objectives, which have been presented and discussed in more detail in both Chapter I and Appendix I. These objectives deal with the following areas of concern: economic development; senior government involvement; environmental protection and enhancement; community services; and development.

This study estimated an economic value of the aesthetics of the public beach environment that could be used in benefit-cost analyses to determine the economic efficiency of the provision of this tourism resource. This value was noted as being $7,794.23 per summer season when WTP values were elicited from resident beach users. Also, at the same time, according to the mechanisms of the travel cost method, this value was calculated as $71,282.88 per summer season for the same group of beach users. These dollar amounts could be used as values of producers surplus in benefit-cost analyses. As the producer of the aesthetics of the public beach environment, the Lakeland Municipality could determine benefit-cost ratios to compare the economic efficiency

of providing this nonmarket commodity with the provision of competing uses (e.g., forestry) of the same environment.

The large difference between the economic values derived from the use of the contingent valuation and travel cost methods should provide some indication that consideration should be given to the type of method used to estimate the value of a nonmarket good. The use of travel costs as an indirect measure of the aesthetics' value provided a greater dollar amount than that of WTP. Although, as a direct value of the aesthetics, the WTP amount represents consumers' actual valuations of this commodity. This latter value of demand may more truly reflect consumers' preferences for this nonmarket good. The much greater value estimated with the travel costs may not represent consumers' true valuations of this commodity due to the fact that consumers were not required to think about their consumption of the aesthetics.

The inclusion of the adequacy-importance model in the survey questionnaire may have also provided results that could assist in the achievement of the Municipality's environmental, community services, and development planning objectives. The results of both the pilot test and the importance ratings in the adequacy-importance model indicated that the attributes used in this model were very important when assessing the attractiveness of a public beach area in Central Saskatchewan. These importance ratings indicated that potential beach users may expect to find certain features in public beach areas in Central Saskatchewan. These features may be preferred by various individuals and as a result may affect their choice of public beach areas that they will visit. On

the other hand, resident beach users were not very satisfied with the attributes in the public beach environment. The findings of the adequacy-importance model indicated that changes or improvements should be made to various features of this setting so that beach users could enhance their recreational experiences. The satisfaction ratings indicated that beach users were especially dissatisfied with the availability and cleanliness of the washroom and change house facilities.

The results of this contingent valuation study indicated that attitude could not be used to explain why beach users valued the aesthetics as they did in dollar terms. Such a finding should not be interpreted to mean that the examination of the attributes of nonmarket goods cannot provide insight into the demand of nonmarket goods. These findings should also not lead to the conclusion that disciplines of a noneconomic nature, such as psychology and sociology, could not be used to better understand demand and preference of nonmarket commodities. As has been noted earlier, various problems (e.g., the high incidence of missing data) may have lead to the insignificance of the attitude variable in the multiple regression analysis. Consequently, consideration should be given to future research that could be conducted to overcome the various problems encountered in this study and to gain a better understanding of the possible role of attributes in the valuation of nonmarket goods. Future research could focus upon using interviewing methods, addressing hypothetical, information, and strategic biases, and examining the embedding effect.

As was noted earlier, the use if interview methods to gather data may help to avoid the problem of the high incidence of missing data. The use of interviewing techniques to collect data may have also helped to prevent what seems to be the problem of strategic bias. The results of the chi-square test for goodness of fit indicated that the reason why approximately 75 percent of the resident beach users would contribute zero dollars to the special fund was the fact that they already paid taxes. It was hoped that the use of a special fund, and not taxes, as the vehicle of payment would lessen the possibility of residents thinking that municipal taxes would be raised to pay for upgrading and maintenance of the public beach environment. The study results indicated that this bias may be present. If interviews, instead of questionnaires, had been used as the data collection method, the point could have been reinforced that the purpose of this survey was not to estimate by how much municipal taxes should be increased. This may be an especially important consideration given the fact that at that point in time, many of the seasonal residents were angry about the fact that municipal taxes might be raised to support the local grade school. These residents did not have any children that went to this school because they lived year-round in other locations. By using an interview method, the frequency of zero dollar responses for the WTP question could possibly have been reduced.

If an attitude scale, such as the adequacy-importance model that was used in this research project, is included in a contingent valuation study, it may be possible to address the problems of both hypothetical

and information bias. For example, research could be conducted to determine if a psychological measure could be used to determine the features of an intangible good to find a common definition of this good. By doing so, possibly, the problem of hypothetical bias could be avoided. The use of a common definition of the good in question may assist in preventing consumers from forming their own individual definitions and, subsequently, valuing different goods. In addition, if a common description of an intangible good could be formed, information bias could possibly be prevented. With a common definition, all consumers would have the identical information about the features of the commodity. Each individual would not have different information and perceptions on which to base his or her valuations.

Kahneman and Knetsch (in press) noted that an embedding effect may be found in the results of contingent valuation studies. This effect occurs when the dollar valuation of a group of nonmarket goods may not be that much greater than the dollar value of one of these commodities when assessed separately on its own. Kahneman and Knetsch stated that the embedding effect may be a locational factor. As an example they discussed the results of a contingent valuation study conducted in Ontario. They noted that Toronto residents were only willing to pay a fraction more money to prevent declines in fish populations in the entire province of Ontario than they would pay to prevent a similar loss in the Muskoka area located two hundred kilometres north of the city.

Perhaps, the inclusion of a psychological measure in a contingent valuation study may be one means to address the embedding effect. This

type of measure may provide some insight into the reasons why consumers would pay basically the same amount of money to protect the quality of one nonmarket good as they would for a collection of this type of commodity. Attitudes toward, or preferences of, single and collections of goods could be determined and compared. If the embedding effect is a locational factor, then possibly consumers' familiarity with and experience in those locations nearest to their place of residence may affect their WTP valuations. For example, if an individual is aware of the features of a particular area in close proximity to his or her home, then he or she has a basis from which to value those features. On the other hand, an area located further away may be a place that an individual has never visited. As a result, he or she may not be able to assess its features in either psychological or economic terms.

The findings of this contingent valuation study provided dollar amounts for the economic value of the aesthetics of the public beach environment. A noneconomic measure was incorporated into the survey instrument to measure beach users' psychological values of this commodity. This attitude measure was found not to be significant in multiple regression analysis, and, therefore, could not be used to explain beach users' demand for this good. Given the problems of data collection and missing values that were previously discussed, the results of the multiple regression analysis should be interpreted with caution.

Perhaps, if efforts are taken to correct these problems, a psychological measure such as attitude may be found to be a significant

factor in explaining consumers' demand for nonmarket goods. Also, as was noted earlier, the inclusion of such a psychological measure in a contingent valuation study may assist in addressing the problems of strategic, hypothetical, and information biases and examining the embedding effect.

This study was carried out to explore the suggestion made by Ajzen and Peterson (1988) to include semantic differential scales as an attitude measure in contingent valuation studies. Although the findings of this study did not indicate any relationship between the noneconomic and economic valuations of the aesthetics, it did examine one possible way of including a psychological measure in a survey instrument. It also provided insight as to how the results of such a study could be applied in a practical manner.

LIST OF REFERENCES

Advertising Research Foundation. (1985). Focus groups: Issues and approaches. New York: Author.

Ajzen, Icek, & Fishbein, Martin. (1980). Understanding attitudes and predicting social behaviour. Englewood Cliffs, New Jersey: Prentice-Hall.

Ajzen, Icek, & Peterson, George L. (1988). Contingent value measurement: The price of everything and the value of nothing? In G.L. Peterson, B.L. Driver, and R. Gregory. (Eds.), Amenity resource valuation: Integrating economics with other disciplines (pp. 65-76). State College, PA: Venture.

Bass, Frank M., & Talarzyk, W. Wayne. (1972). An attitude model for the study of brand preference. Journal of Marketing Research, 9, 93-6.

Bass, Frank M., & Wilkie, William L. (1973). A comparative analysis of attitudinal predictions of brand preference. Journal of Marketing Research, 10, 262-269.

Bradford, David F. (1970). Benefit-cost analysis and demand curves for public goods. Kyklos, 23, 775-791.

Brookshire, David S., Ives, Berry C., & Schulze, William D. (1976). The valuation of aesthetics preferences. Journal of Environmental Economics and Management, 3, 325-346.

Calder, Bobby J. (1977). Focus groups and the nature of qualitative marketing research. Journal of Marketing Research, 14, 353-364.

Carls, E. Glenn. (1979). Coastal recreation: Esthetics and ethics. Coastal Zone Management Journal, 5, 119-130.

Cicchetti, Charles J., & Smith, V. Kerry (1973). Congestion, quality deterioration, and optimal use: wilderness recreation in the Spanish Peaks Primitive Area. Social Science Research, 2, 15-30.

Cohen, Joel B., Fishbein, Martin, & Ahtola, Olli T. (1972). The nature and uses of expectancy-value models in consumer attitude research. Journal of Marketing Research, 9, 456-460.

Cummings, Ronald G., Brookshire, David S., & Schulze, William D. (Eds.). (1986). Valuing environmental goods: An assessment of the contingent valuation method. Totowa, New Jersey: Rowman & Allanheld Publishers.

Department of Regional Economic Expansion. (1970). The Canada Land Inventory: Land capability classification for outdoor recreation, Report No. 6 - 1969. Ottawa: Queen's Printer for Canada.

Desvousges, William H., Smith, V. Kerry, & Fisher, Ann. (1987). Option price estimates for water quality improvements: A contingent valuation study for the Monongehela River. Journal of Environmental Economics and Management, 14, 248-267.

Ditton, Robert B., & Goodale, Thomas L. (1973). Water quality perception and the recreation uses of Green Bay, Lake Michigan. Water Resources Research, 9, 569-579.

Ecologistics. (March 1976). A study of land and water use at Emma and Christopher Lakes: Final report.

Fishbein, Martin. (1963). An investigation of relationships between beliefs about an object and the attitude toward that object. Human Relations, 16, 233-239.

Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention and behavior: An introduction to theory and research. Reading, Mass: Addison-Welsey Publishing Co.

Freeman, A. Myrick., III., (1986). On assessing the state of the arts of the contingent valuation method of valuing environmental changes. In R. G. Cummings, D. S. Brookshire, & W. D. Schulze (Eds.), Valuing environmental goods: An assessment of the contingent valuation method (pp. 148-161). Totowa, New Jersey: Rowman & Allanheld.

Greenley, Douglas A., Walsh, Richard G., & Young, Robert A. (1982). Economic benefits of improved water quality: public perceptions of option and preservation values. Boulder: Westview.

Hecock, Richard D. (1970). Recreation behavior patterns as related to site characteristics of beaches. Journal of Leisure Research, 2, 237-250.

Hendee, John C., & Harris, Robert W. (1970). Foresters' perception of wilderness-user attitudes and preferences. Journal of Forestry, 68, 759-762.

Howe, Charles W. (1986). Benefit-cost analysis for water system planning (4th ed.). Washington, DC: American Geophysical Union.

Iso-Aholo, Seppo E. (1980). The social psychology of leisure and recreation. Dubuque, Iowa: Wm. C. Brown Company Publishers.

Just, Richard E., Hueth, Darrell L., & Schmitz, Andrew. (1982). Applied welfare economics and public policy. Englewood Cliffs, N.J: Prentice-Hall, Inc.

Kahneman, Daniel, & Knetsch, Jack L. (in press). Valuing public goods: The purchase of moral satisfaction. Journal of Environmental Economics and Management.

Lancaster, K.J. (1966). A new approach to consumer theory. Journal of Political Economy, 74, 132-157.

Lautman, Martin R. (1981). Focus groups: Theory and method. In Andrew A. Mitchell (Ed.), Advances in consumer research: Vol.1. Association For Consumer Research.

Lipsey, Richard G., Sparks, Gordon R., & Steiner, Peter O. (1976). Economics (2nd ed.). New York: Harper & Row, Publishers.

Mazis, Michael B., Ahtola Olli, & Klippel, R. Eugene. (1975). A comparison of four multi-attribute models in the prediction of consumer attitudes. Journal of Consumer Research, 2, 38-52.

McConnell, Kenneth, E. (1977). Congestion and willingness to pay: A study of beach use. Land Economics, 53(2), 185-195.

Nasar, Jack L. (1987). Physical correlates of perceived quality in lakeshore development. Leisure Sciences, 9, 259-279.

Nassauer, Joan Iverson. (1983). Oil and gas development in a coastal landscape: Visual preferences and management implications. Coastal Zone Management Journal, 11(3), 199-217.

Nieman, Thomas J. (1980). The visual environment of the New York coastal zone: User preferences and perceptions. Coastal Zone Management Journal, 8(1), 45-61.

Osgood, C. E., Suci, G. J., & Tannenbaum, R. H. (1957). The measurement of meaning. Urbana, Ill.: University of Illinois Press.

Peterson, George L. (1974). A comparison of the sentiments and perceptions of wilderness managers and canoeists in the Boundary Waters Canoe Area. Journal of Leisure Research, 3, 194-206.

Peterson, George L., Driver, B.L., & Gregory, Robin. (Eds.). (1988). Amenity resource valuation: integrating economics with other disciplines. State College, PA: Venture Publishing, Inc.

Peterson, George L., & Neumann, Edward S. (1969). Modelling and predicting human response to the visual recreation environment. Journal of Leisure Research, 1, 219-237.

Phillips, W. E., & Adamowicz, W. L. (1986). Valuing environmental resources, commodities, and services. Agriculture and Forestry Bulletin, 9, 14-18.

Randall, Alan. (1987). Resource economics: An economic approach to natural resource and environmental policy (2nd ed.). New York: John Wiley & Sons.

Randall, A., Hoehn, J.P., & Brookshire, D. (1983). Contingent valuation surveys for evaluating environmental assets. Natural Resources Journal, 23(3), 635-48.

Randall, Alan, Ives, Berry, & Eastman, Clyde. (1974). Bidding games for valuation of aesthetic environmental improvements. Journal of Environmental Economics and Management, 1, 132-149.

Rowe, Robert D., D'Arge, Ralph C., & Brookshire, David S. (1980). An experiment on the economic value of visibility. Journal of Environmental Economics and Management, 7, 1-19.

Saskatchewan Department of Rural Development. (September 1987). Lakeland development plan: Policy Plan.

Saskatchewan Department of Rural Development. (1987). Lakeland development plan: Background.

Thayer, Mark A. (1981). Contingent valuation techniques for assessing environmental impacts: Further evidence. Journal of Environmental Economics and Management, 8, 27-44.

Thurstone, L. L. (1931). The measurement of attitudes. Journal of Abnormal and Social Psychology, 26, 249-269.

Veeman, Terrence S. (1985). The application of economic analysis to public land and resource management: An overview. In T. J. Cottrell (Ed.), Role of economics in integrated resource management (pp. 17-25), Edmonton: Alberta Forestry, Lands, and Wildlife.

Walsh, Richard G. (1986). Recreation economic decisions: Comparing benefits and costs. State College, PA: Venture.

Walsh, Richard G., Gillman, Richard A., & Loomis, John B. (1982). Wilderness resource economics: recreation use and preservation values. Denver, Colorado: American Wilderness Alliance.

Walsh, Richard G., Miller, Nicole P., & Gilliam, Lynde O. (1983). (1983). Congestion and willingness to pay for expansion of skiing capacity. Land Economics, 59(2), 195-210.

Willig, Robert D. (1976). Consumer's surplus without apology. American Economic Review, 66, 589-597.

APPENDIX I

APPENDIX I

GENERAL OBJECTIVES OF THE 1987 POLICY PLAN FOR THE RURAL MUNICIPALITY OF LAKELAND, NO. 521**

The following objectives have been established as a framework for making development decisions in the Rural Municipality of Lakeland.

(1) Environmental Protection and Enhancement

(a) To conserve the land and water resources of the area.

(b) To achieve the economic benefits of natural resource potentials within sound environmental management practices.

(c) To provide for maximum enjoyment of the water and land resources of the area for residents and nonresidents alike.

(2) Community Services

(a) To upgrade, expand, and enhance the facilities serving the public so as to widen the range of activities available to residents and nonresidents.

(b) To ensure that recreational opportunities are provided for all ages and income groups.

(c) To provide a satisfactory level of municipal services to serve the people of the community.

(d) To mobilize the initiative and capital of the private sector assist in creating the type of community which reflects the needs and aspirations of its people.

(e) To foster a feeling of community emerging from a common interest and concern for the natural beauty of the area.

(3) Development

(a) To ensure an orderly pace of development which reflects both market conditions and public needs and is compatible with municipal capabilities.

(4) Economic Base

(a) To strengthen the economic base of the municipality by creating a positive environment for business development, especially relating to tourism development, recognizing the realities of climatic, resource, and market conditions.

(5) Senior Government Involvement

(a) To elicit the support of senior governments where appropriate to assist in overcoming the legacy of problems inherited by the municipality: lack of minimal development of beach areas, fragmented land holding patterns and others.

**Saskatchewan Department of Rural Development. (September 1987), Lakeland Development Plan: Policy Plan.

APPENDIX II

COVER LETTER

July 1989

TO SURVEY PARTICIPANTS,

Please find enclosed a questionnaire about **3 public beaches in the Rural Municipality of Lakeland in Central Saskatchewan.** This questionnaire is a part of a survey that I am conducting this summer. I am a graduate student in the Department of Recreation and Leisure Studies at the University of Alberta.

You belong to a sample of individuals who have been selected to participate in this survey. The completion of this questionnaire should take **approximately 20-30 minutes** of your time.

Please complete this questionnaire **AS SOON AS POSSIBLE.** It can be returned in the envelope provided.

If you received this questionnaire in the parking lot at a beach area, please do not feel that you have to complete it while you are at the beach. **PLEASE FEEL FREE TO TAKE IT HOME TO ANSWER.**

Please note that the contents of all completed questionnaires will remain **CONFIDENTIAL.**

The Lakeland area is an ideal setting in which to distribute this type of questionnaire. Although the Lakeland Municipality will **not** use the results of this survey, a brief summary of these findings will be prepared. If you would like to receive a copy of this summary, please complete the form provided at the end of the questionnaire. **(PLEASE NOTE THAT THIS SUMMARY WILL EXPLAIN ONLY THE OVERALL FINDINGS OF THIS SURVEY AND THAT INDIVIDUAL RESPONSES WILL STILL REMAIN CONFIDENTIAL.)**

Thank-you for your time and assistance. **ENJOY YOUR SUMMER!!!**

Yours truly,

Dorothy MacAuley
Box 27, Site 7, R.R.1
Christopher Lake, Sask.
S0J 0N0

INSTRUCTION SHEET

PLEASE NOTE...

The following individuals should complete this questionnaire:

(1) If you received this questionnaire at your cottage or year-round residence in Sunnyside Beach, Sunset Bay, or Neis' Beach, it may be completed by **one** person in your household. This person must be **16 years of age or older.**

(2) If you received this questionnaire in a parking lot at Sunnyside Beach, Sunset Bay, or Neis' Beach, it may be completed by **one** person in your party who is **16 years of age or older.** Also, one person in your party can take this questionnaire home to be completed by **one** person who is **16 years of age or older** in his or her household.

RESIDENT QUESTIONNAIRE

Three of the public beach areas in the Rural Municipality of Lakeland are found at SUNNYSIDE BEACH, SUNSET BAY, and at WEYERHAUESER PARK at NEIS' BEACH. These three beaches are located along the south shore of South Emma Lake. These three beach areas provide a setting in which you and your family and friends can participate in a variety of recreational activities.

THE PURPOSE OF THIS QUESTIONNAIRE IS TO EXAMINE HOW YOU VALUE THESE PUBLIC BEACH AREAS.

---

(1) (i) Are you a year-round resident in the Lakeland Municipality?
(Please check the appropriate answer.)

Yes ____ No ____

(ii) If yes, in which subdivision do you reside?
(Please check the appropriate answer.)

____ Sunnyside Beach
____ Sunset Bay
____ Neis' Beach
____ Another subdivision in the Lakeland Municipality (Please specify)_____
_____ _____

(iii) Do you own or rent the residence in which you live?
(Please check the appropriate answer.)

Own ____ Rent ____

(2) (i) Are you a cottager in the Lakeland Municipality?
(Please check the appropriate answer.)

Yes ____ No ____

(ii) If yes, in which subdivision is your cottage located:
(Please check the appropriate answer.)

____ Sunnyside Beach
____ Sunset Bay
____ Neis' Beach
____ Another subdivision in the Lakeland Municipality (Please specify)_____
_____

(iii) Do you own or rent the cottage in which you are now staying?
(Please check the appropriate answer.)

Own ____ Rent ____

(3) If you are a cottager in the Lakeland area, were do you reside on a permanent, year-round basis?

_____, _____
(City, town, or village) (Province)

(4) Which of the following beaches will you and your household members have visited during the time from the Victoria Day long weekend in May to the Labour Day long weekend in September? (Please check the appropriate answer.)

____ Sunnyside Beach
____ Sunset Bay
____ Neis' Beach (at Weyerhaueser Park)
____ I will not visit any of these 3 beaches
____ I will use the beach found at my own cottage

IF YOU WILL NOT SPEND ANY TIME AT THE BEACHES AT SUNNYSIDE BEACH, SUNSET BAY, OR NEIS' BEACH, PLEASE GO ON TO ANSWER QUESTIONS #12-17.

IF YOU WILL USE THESE BEACHES, PLEASE GO ON TO ANSWER QUESTIONS #5-17.

THANK-YOU!

(5) Which recreational activities will you and the members of your household participate in while at a beach area in Sunnyside Beach, Sunset Bay, or Neis' Beach? (Please check the appropriate answer.)

____ swimming	____ waterskiing	____ motorboating
____ sunbathing	____ canoeing	____ windsurfing
____ picnicking	____ kayaking	____ sailboating
____ walking		

Other activities (Please specify)_____

_____

(6) (i) Approximately, how many day visits will you and the members of your household make to the beaches at Sunnyside Beach, Sunset Bay, or Neis' Beach during the period from the Victoria Day long weekend in May to the Labour Day long weekend in September?

Number of day visits to the beaches _____

(ii) What is the average length of time (in hours) of one typical day visit to a beach? _____

(iii) Including yourself, how many people are in your household?

_____

(iv) Please estimate your household's approximate costs associated with using the beaches at Sunnyside Beach, Sunset Bay, or Neis' Beach during the period from the Victoria Day long weekend to the Labour Day long weekend.

Travel (e.g., gasoline).....$_____
Food (e.g., snack food, groceries, and restaurants).$_____
Supplies (e.g., campstove fuel).....$_____
Accommodation (e.g., camping fees).....$_____
Equipment (e.g., rentals).....$_____
Other expenses (Please specify)
_____.....$_____
_____.....$_____
_____.....$_____
TOTAL.....$_____

(7) To complete the following question, please mark with an "X" the appropriate spaces on the scales presented.

For example, if you think that sandy beaches are extremely important when thinking about visiting a public beach area in Central Saskatchewan, you would mark a scale as the first scale below is marked.

****

When thinking about visiting a public beach area in Central Saskatchewan, how important are the following features in making the decision to visit such a beach area?

	1	2	3	4	5	6	X 7
Sandy beaches							
Cleanliness and quality of lake water							
Availability of washroom, shower, and change house facilities							
Cleanliness of washroom, shower, and change house facilities							
Noise levels							
Access to areas where beaches are located							
Presence of trees							
Absence of litter and garbage							
Number of people at the beach							
Separation of boating and swimming areas							
Availability of picnic areas and facilities							
	1	2	3	4	5	6	7

****

1=extremely unimportant
2=quite unimportant
3=slightly unimportant
4=neither unimportant nor important
5=slightly important
6=quite important
7=extremely important

(8) Complete this question in the same fashion that you answered #9.

For example, if you think that sandy beaches are slightly satisfactory at the Sunnyside, Sunset Bay, and Neis' beaches, then you would mark the scale as the first scale below is marked.

**When you complete the scales below, your answers should reflect an average rating for the 3 beaches together, even though you may tend to visit one beach more than the others.

How satisfactory do you find the following features at the public beach areas at Sunnyside Beach, Sunset Bay, and Neis' Beach?

	1	2	3	4	5	6	7
Sandy beaches					X		
Cleanliness and quality of lake water							
Availability of washroom, shower, and change house facilities							
Cleanliness of washroom, shower, and change house facilities							
Noise levels							
Access to areas where beaches are located							
Presence of trees							
Absence of litter and garbage							
Number of people at the beach							
Separation of boating and swimming areas							
Availability of picnic areas and facilities							
	1	2	3	4	5	6	7

****

1=extremely unsatisfactory
2=quite unsatisfactory
3=slightly unsatisfactory
4=neither unsatisfactory nor satisfactory
5=slightly satisfactory
6=quite satisfactory
7=extremely satisfactory

(9) Suppose for various reasons such as the lack of upkeep, too many users, and the lack of facilities (e.g., washrooms and picnic areas) all of the public beach areas at Sunnyside Beach, Sunset Bay, and Neis' Beach lost their appeal that has attracted you to use them now in the summer of 1989.

What other public beach areas, where you could enjoy yourself in the same fashion, would you consider visiting? Approximately, how far would these other beach areas be located from you permanent residence?

Other Beach Areas (Please Name)	Distance From Your Permanent Residence (Please indicate if distance is in miles or kilometres)
(1)_____	_____
(2)_____	_____
(3)_____	_____

(10) The 3 beaches--Sunnyside Beach, Sunset Bay, and Neis' Beach--together make up a recreation area in which you, your family, and your friends can enjoy participating in a variety of activities. These public beach areas have recently been upgraded and are also maintained on a regular basis to provide an attractive recreation area for beach users.

Recent efforts to upgrade these 3 beaches has included:

-creation of Weyerhaueser Park, a picnic area with picnic tables and barbecues;
-enlargement of the Neis' and Sunset Bay beaches by bringing in sand;
-moving the parking lot away from the actual beach at Sunnyside Beach to a site that is not visible from this shore area;
-creation of a pedestrian walkway from the parking lot to the beach at Sunnyside;
-creation of a "drop-off" area at Sunnyside Beach where beach users can unload beach and picnic supplies from their vehicles; and
-provision of additional barbecues at the Sunnyside Beach picnic area.

Regular maintenance of these beaches includes:

-garbage pickup;
-cleaning of washroom and change house facilities; and
-upkeep of picnic tables, benches, barbecues, and playground equipment.

PLEASE CONSIDER THE FOLLOWING SITUATION:

Suppose that 5 years in the future, the beaches at Sunnyside Beach, Sunset Bay, and Neis' South are not in the same condition that they are in now during the summer of 1989. Imagine that these beaches have not been maintained regularly, nor upgraded when the need should arise. Hence, these 3 beaches will no longer have facilities such as barbecues, picnic tables, garbage cans, benches, washrooms, playground toys, and change houses. The lack of maintenance would have caused any existing facilities to deteriorate, while the lack of upgrading efforts would prohibit their replacement. Sand that has been placed at Sunset Bay and Neis' Beach will have been washed away by the movement of the lake water, but will not be replaced.

Therefore, 5 years from now, if upgrading and maintenance have not been carried out, the Sunnyside, Sunset Bay, and Neis' beaches would be much different from what they are now. Picnic areas and facilities at each of the 3 beaches would be narrower when lost sand is not replaced. All that would remain of the present upgrading efforts would be the new parking lot, the pedestrian walkway, and the drop-off area at Sunnyside Beach.

What is the maximum amount of money that your household would be willing to pay to a Special Fund that would only be used to maintain and upgrade these 3 beaches to ensure that their present condition does not deteriorate within the next 5 years? This payment to the Special Fund would be made on a per summer season basis as long as you use these beaches. (The summer season would be defined as the time period extending from the Victoria Day long weekend in May to the Labour Day long weekend in September.) When deciding how much money to pay to this Special Fund, please keep in mind your income and, realistically, what amount of money you can afford and would like to pay.

Your household's maximum contribution to the Special Fund per summer season would be $_____.

(11) If you were not willing to pay any money to the Special Fund noted in Question #10, please explain why.

_____

_____

_____

Please provide some information about yourself. Please remember that all information you provide in this questionnaire will remain confidential.

(12) (i) Are you presently employed? Yes ____ No ____

(ii) If yes, are you employed full-time _____; part-time _____; or seasonally _____? (Please check the appropriate answer.)

(13) (i) At the present time, are you a student? Yes ____ No ____

(ii) If yes, are presently enroled in: (Pease check the appropriate answer.)

____ high school
____ university
____ college or technical school
____ other (Please specify)'
_____

(14) What is your birth date? _____/_____
month year

(15) Are you male ____ or female ____?

(16) Please circle the number that represents the highest year of education that you have achieved.

Grade School	1	2	3	4	5	6	7	8	9	
High School	10	11	12	13						
Trade or Technical School				1	2	3	4			
College or University	1	2	3	4	5	6	7	8	9	10

(17) What is your annual household income, before taxes/

_____Less than $ 5,000
_____$ 5,001 - $10,000
_____$10,001 - $15,000
_____$15,001 - $20,000
_____$20,001 - $25,000
_____$25,001 - $30,000
_____$30,001 - $35,000
_____$35,001

_____$40,001 - $45,000
_____$45,001 - $50,000
_____$50,001 - $55,000
_____$55,001 - $60,000
_____$60,001 - $65,000
_____$65,001 - $70,000
_____$70,001 or more

Please use this space to write down any comments that you may have about this questionnaire.

_____
_____
_____
_____
_____
_____
_____

NONRESIDENT QUESTIONNAIRE

Three of the public beach areas in the Rural Municipality of Lakeland are found at SUNNYSIDE BEACH, SUNSET BAY, and at WEYERHAUESER PARK at NEIS' BEACH. These 3 beaches are located along the south shore of South Emma Lake. These 3 beach areas provide a setting in which you and your family and friends can participate in a variety of recreational activities.

THE PURPOSE OF THIS QUESTIONNAIRE IS TO EXAMINE HOW YOU VALUE THESE PUBLIC BEACH AREAS.

---

(1) You or a member of your household will have received this questionnaire in the parking lot at a public beach in the Lakeland area. In which area was this parking lot located? (Please check the appropriate answer.)

____ Sunnyside Beach
____ Sunset Bay
____ Neis' Beach (at Weyerhaueser Park)

(2) Where do you reside on a permanent, year-round basis?

_____, _____
(City, town, or village) (Province)

(3) When you received this questionnaire, were you camping in the Lakeland area? (Please check the appropriate answer.)

Yes ____ No ____

If yes, in which campground were you staying?

_____

(4) When you received this questionnaire, were you visiting the Lakeland area just for the day?
(Please check the appropriate answer.)

Yes ____ No ____

If yes, please list the locations in Lakeland that you visited.

_____
_____
_____
_____

(5) (i) During the time from the Victoria Day long weekend in May until the Labour Day long weekend in September, will you and your party spend time at any of the beaches at Sunnyside Beach, Sunset Bay, or Neis' Beach?
(Please check the appropriate answer.)

Yes ____ No ____

IF NO, THEN PLEASE GO ON TO ANSWER QUESTIONS #14-19

IF YES, THEN PLEASE GO ON TO ANSWER QUESTIONS #6-19

(ii) If yes, which beach(es) will you and your party visit?
(Please check the appropriate answer.)

____ Sunnyside Beach
____ Sunset Bay
____ Neis' Beach (at Weyerhaueser Park)

(6) Which recreational activities will you and the members of your party participate in while at a beach area in Sunnyside Beach, Sunset Bay, or Neis' Beach?
(Please check the appropriate answer.)

____ swimming	____ waterskiing	____ motorboating
____ sunbathing	____ canoeing	____ windsurfing
____ picnicking	____ kayaking	____ sailboating
____ walking		

Other activities (please specify)_____
_____
_____

IF YOU WERE VISITING LAKELAND FOR THE DAY WHEN YOU RECEIVED THIS QUESTIONNAIRE, PLEASE ANSWER QUESTION #7. IF YOU WERE CAMPING IN THE LAKELAND AREA WHEN YOU RECEIVED THIS QUESTIONNAIRE, PLEASE GO ON TO QUESTION #8.

PLEASE ANSWER BOTH QUESTIONS #7 AND #8, IF, DURING THE TIME FROM THE VICTORIA DAY LONG WEEKEND IN MAY TO THE LABOUR DAY LONG WEEKEND IN SEPTEMBER YOU MAY VISIT THESE BEACHES FOR THE DAY, AS WELL AS, VISIT THESE BEACHES WHILE CAMPING.

(7) (i) How many day visits do you expect to make to the beach areas at Sunnyside Beach, Sunset Bay, or Neis' Beach during the period from the Victoria Day long weekend to the Labour Day long weekend?

Number of day visits _____

(ii) What is the average length of time (in hours) of one typical day visit to a beach? _____

(iii) What is the average number of people in your party each time you visit these beaches? _____

(iv) Please estimate your party's or household's average costs for a typical day visit to any of the beaches at Sunnyside Beach, Sunset Bay, or Neis' Beach.

Travel (e.g., gasoline).....$_____
Food (e.g., snack food, groceries, restaurants).....$_____
Supplies (e.g., campstove).....$_____
Accommodation (e.g., campstove).....$_____
Equipment (e.g., rentals).....$_____
Other expenses (Please specify)
_____.....$_____
_____.....$_____
_____.....$_____
TOTAL.....$_____

(8) (i) As a camper in the Lakeland area, how many camping trips do you think you will make this year to this area during the time from the Victoria Day long weekend in May to the Labour Day long weekend in September?

Number of camping trips _____

(ii) Approximately, how many days make up each camping trip?

Average number of days per camping trip _____

(iii) During a typical camping trip, what is the average number of outings that you would make to any of the beaches as Sunnyside Beach, Sunset Bay, or Neis' Beach?

Average number of outings to the beaches _____

(iv) What is the average length of time (in hours) of one typical outing to the beach? _____

(v) What is the average number of people in your camping party?

Average number of people _____

(vi) Please estimate your party's or household's average costs that are associated with spending time at the Sunnyside, Sunset Bay, and Neis' beaches during a typical camping trip.

Travel (e.g., gasoline).....$_____
Food (e.g., snack food, groceries, restaurants)...$_____
Supplies (e.g., campstove fuel).....$_____
Accommodation (e.g., camping fees).....$_____
Equipment (e.g., rentals).....$_____
Other Expenses (Please specify)
_____.....$_____
_____.....$_____
_____.....$_____
TOTAL.....$_____

(9) To complete the following question, please mark with an "X" the appropriate spaces on the scales presented.

For example, if you think that sandy beaches are extremely important when thinking about visiting a public beach area in Central Saskatchewan, you would mark a scale as the first scale below is marked.

****

When thinking about visiting a public beach area in Central Saskatchewan, how important are the following features in making the decision to visit such a beach area?

	1	2	3	4	5	6	X 7
Sandy beaches							
Cleanliness and quality of lake water							
Availability of washroom, shower, and change house facilities							
Cleanliness of washroom, shower, and change house facilities							
Noise levels							
Access to areas where beaches are located							
Presence of trees							
Absence of litter and garbage							
Number of people at the beach							
Separation of boating and swimming areas							
Availability of picnic areas and facilities							
	1	2	3	4	5	6	7

****

1=extremely unimportant
2=quite unimportant
3=slightly unimportant
4=neither unimportant nor important
5=slightly important
6=quite important
7=extremely important

(10) Complete this question in the same fashion that you answered #9.

For example, if you think that sandy beaches are slightly satisfactory at the Sunnyside, Sunset Bay, and Neis' beaches, then you would mark the scale as the first scale below is marked.

**When you complete the scales below, your answers should reflect an average rating for the 3 beaches together, even though you may tend to visit one beach more than the others.

How satisfactory do you find the following features at the public beach areas at Sunnyside Beach, Sunset Bay, and Neis' Beach?

	1	2	3	4	5	6	7
Sandy beaches					X		
Cleanliness and quality of lake water							
Availability of washroom, shower, and change house facilities							
Cleanliness of washroom, shower, and change house facilities							
Noise levels							
Access to areas where beaches are located							
Presence of trees							
Absence of litter and garbage							
Number of people at the beach							
Separation of boating and swimming areas							
Availability of picnic areas and facilities							
	1	2	3	4	5	6	7

****

1=extremely unsatisfactory
2=quite unsatisfactory
3=slightly unsatisfactory
4=neither unsatisfactory nor satisfactory
5=slightly satisfactory
6=quite satisfactory
7=extremely satisfactory

(11) Suppose for various reasons such as the lack of upkeep, too many users, and the lack of facilities (e.g., washrooms and picnic areas) all of the public beach areas at Sunnyside Beach, Sunset Bay, and Neis' Beach lost their appeal that has attracted you to use them now in the summer of 1989.

What other public beach areas, where you could enjoy yourself in the same fashion, would you consider visiting? Approximately, how far would these other beach areas be located from your permanent residence?

Other Beach Areas (Please name)	Distance From Your Permanent Residence (Please indicate if distance is in miles or kilometres)
(1) _____	_____
(2) _____	_____
(3) _____	_____

(12) The 3 beaches--Sunnyside Beach, Sunset Bay, and Neis' Beach--together make up a recreation area in which you, your family, and your friends can enjoy participating in a variety of activities. These public beach areas have recently been upgraded and are also maintained on a regular basis to provide an attractive recreation area for beach users.

Recent efforts to upgrade these 3 beaches have included:

-creation of Weyerhaueser Park, a picnic area with picnic tables and barbecues, at Neis' Beach;
-enlargement of the Neis' and Sunset Bay beaches by bringing in sand;
-moving the parking lot away from the actual beach at Sunnyside Beach to a site that is not visible from this shore area;
-creation of a pedestrian walkway from the parking lot to the beach at Sunnyside;
-creation of a "drop-off" area at Sunnyside Beach where beach users can unload beach and picnic supplies from their vehicles; and
-provision of additional barbecues at the Sunnyside Beach picnic area.

Regular maintenance of these beaches includes:

-garbage pickup;
-cleaning of washroom and change house facilities; and
-upkeep of picnic tables, benches, barbecues, and playground equipment.

PLEASE CONSIDER THE FOLLOWING SITUATION:

Suppose that 5 years in the future, the beaches at Sunnyside Beach, Sunset Bay, and Neis' South are not in the same condition that they are in now during the summer of 1989. Imagine that these beaches have not been maintained regularly, nor upgraded when the need should arise. Hence, these 3 beaches will no longer have facilities such as barbecues, picnic tables, garbage cans, benches, washrooms, playground toys, and change houses. The lack of maintenance would have caused any existing facilities to deteriorate, while the lack of upgrading efforts would prohibit their replacement. Sand that has been placed at Sunset Bay and Neis' Beach will have been washed away by the movement of the lake water, but will not be replaced.

Therefore, 5 years from now, if upgrading and maintenance have not been carried out, the Sunnyside, Sunset Bay, and Neis' beaches would be much different from what they are now. Picnic areas and facilities at each of the 3 beaches would no longer exist. The beaches at Sunset Bay and Neis' Beach would be narrower when lost sand is not replaced. All that would remain of the present upgrading efforts would be the new parking lot, the pedestrian walkway, and the drop-off area at Sunnyside Beach.

What is the maximum amount of money that your household would be willing to pay to a Special Fund that would only be used to maintain and upgrade these 3 beaches to ensure that their present condition does not deteriorate within the next 5 years? This payment to the Special Fund would be made on a per summer season basis as long as you use these beaches. (The summer season is defined as the time period extending from the Victoria Day long weekend in May to the Labour Day long weekend in September.) When deciding how much money to pay to this Special Fund, please keep in mind your income and, realistically, what amount of money you can afford and would like to pay.

Your household's maximum contribution to the Special Fund per summer season would be $_____.

(13) If you were not willing to pay any money to the Special Fund noted in Question #12, please explain why.

_____

_____

_____

Please provide some information about yourself. Please remember that all information you provide in this questionnaire will remain confidential.

(14) (i) Are you presently employed? Yes ____ No ____

(ii) If yes, are you employed full-time ____; part-time ____; or seasonally ____?
(Please check the appropriate answer.)

(15) (i) At the present time, are you a student? Yes ____ No ____

(ii) If yes, are you presently enroled in:
(Please check the appropriate answer.)

____ high school
____ university
____ college or technical school
____ other (Please specify)
_____

(16) What is your birth date? _____/_____
(month) (year)

(17) Are you male _____ or female _____?

(18) Please circle the number that represents the highest year of education that you have achieved.

Grade School	1	2	3	4	5	6	7	8	9	
High School	10	11	12	13						
Trade or Technical School			1	2	3	4				
College or University	1	2	3	4	5	6	7	8	9	10

(19) What is your annual household income, before taxes?

_____Less than $ 5,000
_____$ 5,001 - $10,000
_____$10,001 - $15,000
_____$15,001 - $20,000
_____$20,001 - $25,000
_____$25,001 - $30,000
_____$30,001 - $35,000
_____$35,001 - $40,000
_____$40,001 - $45,000
_____$45,001 - $50,000
_____$50,001 - $55,000
_____$55,001 - $60,000
_____$60,001 - $65,000
_____$65,001 - $70,000
_____$70,001 or more

Please use this space to write down any comments that you may have about this questionnaire.

_____
_____
_____
_____
_____
_____

APPENDIX III

Pilot Test Results

Frequency counts of those attributes that pilot test participants believed to be important when considering the attractiveness of public beach areas in Central Saskatchewan:

Attributes	Number of Responses
Absence of litter and garbage	32
Availability of picnic areas and facilities	19
Number of beach users	19
Separation of boating and swimming areas	19
Cleanliness and quality of lake water	18
Noise levels	17
Availability of washroom, shower, and change house facilities	17
Presence of trees	14
Access to areas where beaches are located	13
Cleanliness of washroom, shower, and change house facilities	13
Location of parking lots	12
Sandy beach	12
Availability of recreation activities that are not beach oriented (e.g., golf, hiking, fishing, and tennis)	11
Availability of concessions	10
Use levels of motor boats	10
Presence of grassy areas	10
Location of commercial and residential buildings to beaches	9
Presence of weeds in water	8
Play facilities for children	7
Swimming areas	7
Availability of boating facilities	6
Clean sand	6
Development of buildings	6
Quality of campsites	6
Sandy lake bottom	6

CONTINUED...

Beach entry into water.....5
Natural features.....5
Location of campsites to beach.....5
Presence of wildlife.....5
Cottage accommodation.....4

Dog control.....4
Equipment rental.....4
Few insects.....4
Lifeguards on duty.....4
Quality of parking facilities.....4

Sheltered beach area.....4
Availability of stores.....4
Availability of restaurants.....3
Cost.....3
Distance from permanent residence.....3

Enforcement of bylaws.....3
Water depth.....3
Amount of open space.....2
Attitude of employees.....2
Distance of beach area to
nearby town.....2

Lack of commercial services.....2
Presence of open fire pits.....2
Programming of activities.....2
Proximity of beach to busy places.....2
Quality of beach.....2

Scenery.....2
Supervision of campgrounds.....2
Supervision provided.....2
Amount of asphalt.....1
Availability of attractive beaches to
public and not private cottage owners.....1

Bar bus service.....1
Canoeing opportunities.....1
Depth of beach.....1
Hazard free water.....1
Interpretive centre.....1

CONTINUED...

Overpriced goods.....1
Picket fences.....1
Presence of industry.....1
Presence of motorcycles.....1
Rough water.....1

Warm water.....1
Water free from swimmer's itch.....1
Water to swim in.....1

Dollar Valuation
of the Aesthetics of the Public Beach Environment

RESIDENTS
-estimates based on willingness-to-pay (WTP) values elicited from contingent valuation survey participants

(a) Dollar Value Per Summer Season

(Percentage of resident respondents who were beach users)
x (Number of Sunnyside, Sunset Bay, and Neis' South residences)
x (Mean dollar value of WTP for residents)

= 76.92% x 607 x $16.69
= $7,794.23 per summer season

(b) Dollar Value Per Day Visit

$$\frac{\text{(Total dollar value per summer season)}}{\text{(Average number of day visits for residents)} \times \frac{\text{(Average number of resident beach users per day)}}{\text{(Average number of people per household)}}}$$

= $7,794.23 / [36 x (116/4)]
= $7.55 per day visit

(c) Dollar Value Per Day

$$\frac{\text{(Total dollar value per summer season)}}{\text{(Number of days in the summer season)}}$$

= $7,794.23 / 108
= $72.17 per day

CONTINUED...

RESIDENTS
-dollar values derived from the travel costs of resident beach users

(a) Dollar Value Per Summer Season

(Percentage of resident respondents who are beach users)
x (Number of residences in Sunnyside, Sunset Bay and Neis' Beach)
x (Mean value of travel costs for residents)

= 76.92% x 607 x 152.64
= $71,282.88

(b) Dollar Value Per Day Visit

$$\frac{\text{(Total dollar value for residents per summer season)}}{\text{(Average number of day visits per summer season)} \times \frac{\text{(Average number of resident beach users per day)}}{\text{(Average number of people per household)}}}$$

= $71,282.88 / [36 x (116/4)]
= $69.07 per day visit

(c) Dollar Value Per Day

$$\frac{\text{(Total dollar value for residents per summer season)}}{\text{(Number of days in the summer season)}}$$

= $71,282.88 / 108
= $660.03 per day

CONTINUED...

NONRESIDENTS

-dollar values derived from the willingness-to-pay (WTP) values elicited from contingent valuation survey participants

(a) Dollar Value Per Summer Season

[(Average number of nonresident beach users per day at the public beach environment) / (Average number of people per party)
x (Number of days in the summer season)]
x (Mean dollar value of WTP per summer season for nonresidents

= [(143 / 4) x 108] x $7.73
= [35.75 x 108] x $7.73
= 3,861x $7.73
= $29,845.53 per summer season

(b) Dollar Value Per Day Visit

$$\frac{\text{(Total dollar value for nonresidents per summer season)}}{\text{(Average number of day visits per summer season for nonresidents)} \times \frac{\text{(Average number nonresident beach users per day)}}{\text{(Average number of people per party)}}}$$

= $29,845.53 / [9 x (143 / 4)]
= $92.76 per day visit

(c) Dollar Value Per Day

$$\frac{\text{(Total dollar value for nonresidents per summer season)}}{\text{(Number of days in the summer season)}}$$

= $29,845.53 / 108
= $276.35 per day

CONTINUED...

NONRESIDENTS
-dollar values derived from the travel costs of nonresident beach users

(a) Dollar Value Per Summer Season

[(Average number of nonresident beach users per day) / (Average number of people per party)
x (Number of days in the summer season)]
x (Mean value of travel costs per party)

= [(143 / 4) x 108] x $8.70
= [35.75 x 108] x $8.70
= 3,861 x $8.70
= $33,590.70 per summer season

(b) Dollar Value Per Day Visit

$$\frac{\text{(Total dollar value for nonresidents for summer season)}}{\text{(Average number of day visits per summer season)} \times \frac{\text{(Average number nonresident beach users per day)}}{\text{(Average number of people per party)}}}$$

= $33,590.70 / [9 x (143 / 4)]
= $104.40 per day visit

(c) Dollar Value Per Day

$$\frac{\text{(Total dollar value for nonresidents for summer season)}}{\text{(Number of days in the summer season)}}$$

= $33,590.70 / 108
= $311.03 per day

Chi-square Test For Goodness of Fit

(1) v75 -- Resident Beach Users' First Reason For Not Contributing To The Special Fund

	Category	Cases Observed	Expected	Residual
Already Pay Taxes	1	47	5.25	41.75
Nonres/Users Pay	2	3	5.25	-2.25
Dissat With Ser/Fac	3	3	5.25	-2.25
Rowdiness	4	2	5.25	-3.25
Too Old	5	1	5.25	-4.25
Depends on Need	6	1	5.25	-4.25
Disagree With Improv	7	1	5.25	-4.25
Do Not Use Faci Much	8	1	5.25	-4.25
Need More Info	9	2	5.25	-3.25
Pay Coop Fees	10	1	5.25	-4.25
Maintain Own Beach	11	0	5.25	-5.25
Upkeep Not Problem	12	1	5.25	-4.25
	TOTAL	63		

(2) v70 -- Nonresident Beach Users' Reasons For Not Contributing To The Special Fund

	Category	Cases Observed	Expected	Residual
Do Not Have Money	1	1	1.25	-.25
Not Regular Visitor	2	1	1.25	-.25
Already Pay Taxes	3	2	1.25	.75
Gov't, Cottagers Pay	4	1	1.25	-.25
	TOTAL	5		

APPENDIX IV

Results of the Data Analysis: Nonresidents

The following results are those of the data analysis for the nonresident participants in the contingent valuation survey. These findings present descriptions of both the nonresident beach user and beach use by this type of participant. This information includes demographics, the beaches visited, activities participated in at the Sunnyside, Sunset Bay, and Neis' public beaches, and the average numbers of beach users. Other findings that are presented include the psychological and economic values of the aesthetics of the public beach environment and also the results of multiple regression and chi-square analyses.

These results were not incorporated into the main discussion of this research project due to the fact that they must be interpreted with caution. The sample size of this group of beach users consisted of only 11 individuals, and, therefore, cannot be considered sufficient for statistical purposes.

The Nonresident Beach User

The nonresident beach users ranged in age from 17 to 44 years, with 29 years being the average. Nine of these respondents were female and two were male. One of these individuals was a student and nine persons were employed at the time of survey. Five individuals were employed on a full-time basis, three on a part-time basis, and one seasonally. The average household income, before taxes, for nonresident beach users was

between $25,001 and $30,000.

Nonresident beach users could be either day visitors or campers in the Lakeland Municipality during the summer season. (The summer season was defined as the time period extending from the Victoria Day long weekend in May to the Labour Day long weekend in September.) The survey responses indicated that six of the participating nonresident beach users were only day visitors during this time period, while three were both day visitors and campers, one was only a camper, and the final individual was a visitor staying at a resident's cottage.

The mean distance travelled by these individuals from their place of permanent residence to the public beach environment was 162 kilometres. Seven of these individuals lived on a permanent basis in Prince Albert, Saskatchewan, which is located 47 kilometres from the three public beaches. The shortest distance travelled by a day visitor was 25 kilometres from Spruce Home, Saskatchewan, while the longest distance travelled to get to the study area was 786 kilometres from Red Deer, Alberta. This distance was travelled by the nonresident who was staying at a resident's cottage.

The average number of day visits made by campers to any of the three beaches was 6, while day visitors made an average of 9 day visits during the summer months. (One day visit was equal to four hours.) The average total costs associated with beach use was $188.25 per household for campers and $28.60 per household for day visitors. For both campers and day visitors, the average number of people per party was 4.

Beaches Visited

The nonresident beach users tended to use all of the three public beaches--Sunnyside Beach, Sunset Bay, and Neis' Beach--in the public beach environment. The numbers of participants who used these different beaches are presented in Table A.

Table A

Beaches Visited
By Nonresident Beach Users

Beaches	Number of Nonresident Beach Users
Sunnyside Beach Only	6
Sunset Bay Only	0
Neis' Beach Only	0
Sunnyside Beach and Sunset Bay	2
Sunnyside Beach and Neis' Beach	2
Sunset Bay and Neis' Beach	1
All Three Beaches	0
TOTAL	11

Activities

The nonresident beach users participated in a total of twelve different activities at the public beach areas in the public beach environment. These activities and the number of nonresident beach users that took part in these activities are listed in Table B.

Table B

Recreational Activities
In Which Nonresident Beach Users Participated
At the Sunnyside, Sunset Bay, and Neis' Public Beach Areas

Activities	Number of Nonresident Beach Users
Swimming	11
Sunbathing	11
Walking	8
Motorboating	1
Picnicking	5
Waterskiing	1
Fishing	2
Cycling	2
Golfing	1
Mini Golf	1
Drinking Beer	2
Photography	1

Average Numbers of Beach Users

The average numbers of nonresident beach users who visited the three public beach areas in the public beach environment were calculated. On a per day basis, 114 of these individuals were found to visit Sunnyside Beach, while 16 such beach users visited Sunset Bay, and 13 visited Neis' Beach. The average number of nonresident beach users per day in the public beach environment as a whole was 143.

Psychological Measures

The findings of the adequacy-importance model were utilized to examine beach users' attitudes towards the aesthetics of the public beach environment. Individuals' evaluations of the aesthetics and its attributes were used to estimate the psychological value of this nonmarket commodity. The mean values of the importance and satisfaction evaluations of the attributes included in the adequacy-importance model are presented below in Table C. Those mean values that reflect nonresident beach users' feelings about how important these attributes were when making decisions to visit particular public beaches in Central Saskatchewan were derived from responses to question #9 in the nonresident questionnaire. Those mean values that represent nonresident beach users' beliefs that the Sunnyside, Sunset Bay, and Neis' public beaches had the attributes presented in the model were determined from the responses to question #10 in the nonresident questionnaire.

TABLE C

Mean Values of Importance and Satisfaction Evaluations of Attributes (Nonresident Beach Users)

Attributes	Importance	Satisfaction
Cleanliness and Quality of Lake Water	7 (0)*	6 (0)
Availability of Washroom, Shower, and Change House Facilities	6 (0)	4 (0)
Cleanliness of Washroom, Shower, and Change House Facilities	6 (0)	4 (0)
Noise Levels	5 (0)	5 (0)
Access to Areas Where Beaches Are Located	6 (1)	4 (1)
Presence of Trees	6 (0)	6 (0)
Absence of Litter and Garbage	7 (0)	5 (0)
Number of People at the Beach	5 (0)	6 (0)
Separation of Boating and Swimming Areas	6 (0)	5 (0)
Availability of Picnic Areas and Facilities	6 (0)	5 (0)
Average	6	5

N=sample size

*number of missing cases

IMPORTANCE
1=extremely unimportant
2=quite unimportant
3=slightly unimportant
4=neither unimportant nor important
5=slightly important
6=quite important
7=extremely important

SATISFACTION
1=extremely unsatisfactory
2=quite unsatisfactory
3=slightly unsatisfactory
4=neither unsatisfactory nor satisfactory
5=slightly satisfactory
6=quite satisfactory
7=extremely satisfactory

All of the attributes, with the exception of the number of people at the beach, evaluated in the multi-attribute scales of the adequacy-importance model tended to be rated more positively according to importance than to satisfaction. Overall, nonresident beach users indicated that they believed that the ten attributes in the importance scale were quite important when deciding to visit a public beach area in Central Saskatchewan. These individuals also noted that they were slightly satisfied with these features of the public beach environment.

When importance was evaluated, the features of cleanliness and quality of the lake water and the absence of litter and garbage were both rated as extremely important. These were the only attributes that was rated so positively in terms of importance by nonresident beach users. Six attributes--the availability and cleanliness of washroom, shower, and change house facilities, access to areas where beaches are located, presence of trees, separation of boating and swimming areas, and availability of picnic areas and facilities--were rated as quite important. Noise levels and numbers of people at the beach were evaluated as slightly important.

With respect to satisfaction, three attributes--access to the areas where beaches are located and the availability and cleanliness of washroom, shower, and change house facilities--were found to be neither unsatisfactory nor satisfactory for nonresident beach users overall. Noise levels, absence of litter and garbage, separation of boating and swimming areas, and availability of picnic areas and facilities were rated as slightly satisfactory. The remaining three attributes--

cleanliness and quality of lake water, presence of trees, and the number of people at the beach--were found to be quite satisfactory.

The value of the attitudes toward the aesthetics of the public beach environment were determined using the following equation:

$$A_b = \sum_{i=1}^{N} W_i B_{ib}$$

The variables in this equation are explained in Chapter 2. The values determined with this equation were used for the attitude value included in the multiple regression analysis. The mean value of attitude was 284 for nonresident beach users. The lowest possible value that could be attained would be 10 if an individual rated each attribute in the adequacy-importance model as extremely unimportant or extremely unsatisfactory. On the other hand, if each variable was rated as extremely important or extremely satisfactory, then the highest possible value of attitude would be 490. As this value increases, an individual's attitude towards the aesthetics becomes more positive.

Multiple regression

Multiple regression analysis was used to examine the relationships between the variables of the demand function for the aesthetics of the public beach environment. WTP was used as the dependent variable in the following regression equation:

$$WTP = B_0 + B_1Y + B_2C + B_3S + B_4N + B_5A + B_6R + U$$

where;

β_o = a constant;

Y = annual before tax household income;

C = total household costs associated with the use of the Sunnyside, Sunset Bay, and Neis' public beach areas;

S = distance in kilometres from place of permanent residence to a substitute public beach area;

N = number of day visits that an individual made to the three public beaches during the summer season;

A = beach user's attitude towards the aesthetics of the public beach environment;

R = socioeconomic variables of age, (D), employment, (E), and distance in kilometres from place of permanent residence to the public beach environment, (K); and

U = an error term.

Only one regression equation for nonresident beach users was found to be significant at the 5 percent significance level. This equation did not include the attitude variable, but did incorporate the income, total costs, substitute beach area, day visits, and permanent residence variables. This equation was estimated as the following:

$$\underset{\quad}{WTP} = \underset{\quad}{1.26} + \underset{(4.5)}{.2314Y} - \underset{(14.2)}{.0968C^*} - \underset{(210)}{.0672S^*} + \underset{(5.0)}{1.06N^*} + \underset{(244.9)}{.0745K^*} + U$$

$R^2 = .88938$ $\qquad$ $N = 9$

$F_{critical} = .1127$ $\qquad$ $DF = 5$

$F_{computed} = 4.82421$ $\qquad$ Standard error = 4.2937

$t_{computed} > t_{critical}$

The income, day visits, and place of permanent residence variables were all positively related to the WTP variable in the above equation. These results imply that as a nonresident's income increased by one dollar, he or she would be willing to pay an additional $0.23 to maintain the aesthetics of the public beach environment, and that for each additional day visit made to the public beach environment an individual could be expected to increase his or her WTP payment by $1.06. These findings also state that as the distance of a nonresident's place of permanent residence from the study area increased by one kilometre, this beach user would be willing to pay an additional $0.07 to the special fund. The total cost and substitute variables were found to be negatively related to the WTP variable. Therefore, as total costs associated with beach use increased, a nonresident beach user's WTP amount would be expected to decrease by $0.10. In addition, as the distance to a substitute beach area from a beach user's place of permanent place of residence increased by one kilometre, this individual would be expected to decrease his or her WTP contributions by $0.07.

Multiple regression analysis was also carried out for various demand functions when the travel cost approach was taken into consideration. The dependent variable that was used in this analysis was the number of day visits made to the public beach environment. Independent variables included travel costs, income, distance to substitute beach areas, attitude, distance from place of permanent residence, and the socioeconomic variables of employment and age. The first four independent variables were included in all of the regression

analyses, while the socioeconomic and attitude variables were included in the same fashion as in those equations where WTP was the dependent variable.

The following equation is the general regression equation that was used in this analysis:

$$\text{Number of day visits} = \beta_0 + \beta_1 TC + \beta_2 Y + \beta_3 S + \beta_4 A + \beta_5 R + U$$

where,

β_o = a constant;

Y = annual before tax household income;

TC = travel costs per household;

S = distance in kilometres from place of permanent place of residence to a substitute public beach area;

A = beach user's attitude towards the aesthetics of the public beach environment;

R = socioeconomic variables of age, (D), employment, (E), and distance in kilometres from place of permanent residence to the public beach environment, (K); and

U = an error term.

Three regression equations were found to be significant at the 5 percent significance level. The equation presented below is the one for which the coefficient of multiple determination (R^2) was found to be the

highest:

$$\text{Number of Day Visits} = \underset{(1.86)}{266.34^{*}} \underset{(4.4)}{-10.5334TC^{*}} \underset{(222.6)}{- 5.4544Y} \underset{(58.9)}{+.2783S^{*}} \underset{(5.5)}{-.3433A} -9.2994D + U$$

$R^2 = .89161$ $\qquad$ $N = 8$

$F_{computed} = 3.2817$ $\qquad$ $DF = 5$

$F_{critical} = .2493$ $\qquad$ Standard error = 3.2817

$t_{computed} > t_{critical}$

According to this equation, the substitute beach area and travel cost variables were positively related to the dependent variable of number of day visits made to the public beach environment. Therefore, as the distance that would have to be travelled to a substitute beach area increased by one kilometre, a resident beach user would be expected to make an additional one quarter day visit per summer season, and as travel costs increased by one dollar, this individual would be expected to make 10 more visits. The variables of income, attitude, and age were negatively related to the dependent variable. Implying that as a nonresident beach user's income increased by one dollar, he or she would be expected to make five less day visits, and that as this person's attitude value increased by one unit for the aesthetics, he or she would be expected to make 0.5 less day visits to the three public beaches. Also, when a nonresident increases in age by one year, he or she would

be expected to make nine fewer day visits.

The results of the multiple regression analysis for both the dependent variables of WTP and number of day visits must be interpreted with caution. As was noted earlier, the sample size of nonresident beach users was very small (i.e., 11 participants) As a result, the use of this sample for statistical purposes is questionable. In addition, the problem of multicollinearity may have existed. The correlation coefficients for certain variables tended to be fairly high (i.e., ranging between 0.7 and 1.0). This situation tended to exist for the following pairs of independent variables: (1) distance from place of permanent residence to the public beach environment and distance from place of permanent residence to a substitute beach area; (2) income and distance from place of permanent residence to a substitute beach area; (3) income and distance from place of permanent residence to the public beach environment; (4) income and age; and (5) age and the distance from place of permanent residence to a substitute beach area.

Willingness-to-pay Values

Mean values were calculated for the WTP amounts elicited from nonresident beach users. The mean WTP value per summer season for one party was $7.73 for nonresidents. WTP values ranged from zero to $25.00 per party for one summer season. Forty-five of these nonresident respondents were not willing to pay any money to maintain the condition of the beaches of the public beach environment.

Question #13 of the nonresident questionnaire was used by beach users to explain why they would not contribute money to the special fund. These responses were examined using content analysis. Then, the chi-square test for goodness of fit was used to examine the frequencies of the reasons noted by nonresident beach users (see Appendix III). The computed chi-square statistic was found not to be significant at the five percent significance level. Implying, that no reason in particular kept nonresident beach users from wanting to contribute portions of their incomes to the upgrading and maintenance of the public beach environment.

WTP values elicited from nonresident beach users were totalled to determine the dollar values of the aesthetics of the public beach environment. These values were also estimated using travel costs as an indirect measure of willingness-to-pay. These values are presented in Table E in terms of a total value per summer season and also on the basis of both dollar values per day visit and per day. The calculations of these dollar amounts are presented in Appendix III.

Table D

Economic Value
of the
Aesthetics of the Public Beach Environment
(Nonresidents)

	Total Value Per Summer Season	Value Per Day Visit	Value Per Day
CONTINGENT VALUATION	$29,845.53	$ 92.76	$276.35
TRAVEL COST	$33,590.70	$104.40	$311.02